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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
AIR AND RADIATION

September 12, 1991

TO: ✓ Jeff Holmstead, White House Counsel
David Rivkin, DOE
Willie Taylor, DOI
Art Fraas, OMB

Attached is the redraft of the Arizona Visibility/Navajo
Generating Station rule for your review.


Tom Kiernan

6560-50

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[AD-FRL-]

Approval and Promulgation of Implementation Plans:
Revision of the Visibility FIP for Arizona

AGENCY: U.S. Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This notice revises the Federal implementation plan (FIP) for the State of Arizona to include a sulfur dioxide (SO₂) emission limit of 42 nanograms per Joule (ng/J) [0.10 pounds per million British thermal units (lbs/MMBtu)], heat input for the Navajo Generating Station (NGS) to remedy wintertime visibility impairment in the Grand Canyon National Park (GCNP). Compliance with this emission limit will be phased-in by unit in 1997, 1998, and 1999 and determined on a plant-wide annual rolling average basis. In addition, NGS will be required to reschedule its maintenance such that 6 unit-weeks of maintenance will be performed during the winter months.

This action is taken pursuant to sections 169A and 110(c) of the Clean Air Act (Act), 42 U.S.C. sections 7491 and 7410(c), which require EPA, upon default by a State, to take appropriate measures to remedy certified visibility impairments in mandatory Class I areas where the impairment

is reasonably attributed to a specific source. On September 5, 1989, EPA preliminarily attributed a significant portion of wintertime impairment in GCNP to the NGS (54 FR 36948). On February 8, 1991, EPA proposed to require NGS to meet new emission limits to address that impairment (56 FR 5173), reopened the comment period on EPA's September 5, 1989 preliminary attribution finding and provided an opportunity for public comment on all other issues relevant to the rulemaking proposal. Over 380 comments were received during this initial comment period. In addition to soliciting written comments during the comment period, EPA held a public hearing on March 18 and 19, 1991, in Phoenix, Arizona. A copy of the transcript of the hearing is in Docket A-89-02A. After the close of the comment period on April 19, 1991, many meetings took place among representatives of the Salt River Project (SRP) acting on behalf of the NGS participants, and representatives of the Grand Canyon Trust (GCT) and the Environmental Defense Fund (EDF) acting on behalf of their organizations. In August 1991, representatives of the NGS participants and the environmental groups agreed on an SO₂ control strategy for NGS and recommended that it be adopted by EPA. They entered into a memorandum of understanding (MOU) memorializing their agreement which was submitted (together with associated documents) to EPA. Therefore, EPA reopened the comment period on its February 1991 proposal to request comments on

the regulatory strategy option and legal rationale presented in the MOU and associated documents [56 FR 38399 (August 13, 1991)]. During the supplemental comment period SRP several work groups withdrew all comments which were inconsistent with a rule which is consistent with the MOU.

The timing of today's action is in accordance with a revised settlement agreement between EPA and EDF in EDF v. Reilly, No. C82-6850 RPA (N. D. Cal.).

EFFECTIVE DATE: This action will be effective on [30 days from date of publication].

Docket: Pursuant to section 307(d)(1)(B) of the Act, 42 U.S.C. 7607(d)(1)(B), this action is subject to the procedural requirements of section 307(d). Therefore, EPA established Docket A-89-02A for this action. Materials related to the development of this notice have been placed in this docket. Materials related to EPA's preliminary attribution determination [54 FR 36948 (September 5, 1989)] have been placed in Docket A-89-02. For background information, materials related to the development of the visibility protection program (40 CFR 51.300 et seq.) are available in Docket A-79-40. Also, materials related to the development of the visibility new source review (NSR) and visibility monitoring strategies are available in Docket A-84-32. Materials related to the visibility long-term strategy, implementation of control strategy, and integral vista program are available in Docket A-85-26. All dockets

are available for public inspection and copying between 8:30 a.m. to 12:00 noon and 1:30 p.m. to 3:30 p.m., Monday through Friday, at EPA's Central Docket Section, Office of the General Counsel, Room 1500, 401 M Street, S.W., Washington, DC 20460. A reasonable fee may be charged for copies.

FOR FURTHER INFORMATION CONTACT: Mr. David H. Stonefield, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards (MD-15), Research Triangle Park, North Carolina 27711, (919) 541-5350 or FTS 629-5350.

SUPPLEMENTARY INFORMATION:

Background

A. Regulatory Requirements

Section 169A of the Act, 42 U.S.C. 7491, sets as a national goal "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution." Mandatory Class I Federal areas are certain national parks, wildernesses, and international parks as described in section 162(a) of the Act, 42 U.S.C. 7472(a). Section 169A requires that EPA promulgate regulations to assure reasonable progress toward meeting the national goal for mandatory Class I Federal areas where EPA has determined that visibility is an important value. On November 30, 1979, EPA identified 156 such areas, including the GCNP in Arizona, where visibility

is an important air quality-related value (44 FR 69122). Section 169A specifically requires EPA to promulgate regulations requiring States to amend their State implementation plans (SIP's) to provide reasonable progress toward meeting the national goal for the 156 areas. On December 2, 1980, EPA promulgated the required visibility regulations (45 FR 80084, codified at 40 CFR 51.300 et seq.). Specifically, the visibility regulations require the 36 States listed in section 51.300(b), including Arizona, to: (1) coordinate SIP development with the appropriate Federal land managers (FLM's), (2) develop a program to assess and remedy visibility impairment from new and existing sources, (3) develop a long-term (10 to 15 years) strategy to assure reasonable progress toward the national goal, (4) develop a visibility monitoring strategy to collect information on visibility conditions, and (5) consider in all aspects of visibility protection any "integral vistas" (important views of landmarks or panoramas that extend outside of the boundaries of the Class I area) identified by the FLM's as critical to the visitors' enjoyment of the Class I areas. The affected States were required to submit revised SIP's satisfying these provisions by September 2, 1981 [see 45 FR 80091, codified at 40 CFR 51.302(a)(1)].¹

¹The EPA's 1980 regulations implementing the statutory requirements of section 169A address visibility impairment that is reasonably attributable to a single source of small

The second and third requirements listed above are of particular relevance to today's action. Pursuant to 40 CFR 51.302(c)(2), each affected State is required to include in its SIP such emission limitations, schedules of compliance, and other measures as may be necessary to make reasonable progress toward the national visibility goal. Under 40 CFR 51.302(c)(1), an FLM may certify to a State that there exists impairment of visibility in any mandatory Class I Federal area. Such impairment must be addressed in accordance with 40 CFR 51.302(c) which sets forth measures for achieving reasonable progress, including best available retrofit technology (BART) and a long-term strategy (see 40 CFR 51.302(c)(1) and (2), section 169A(b)(2)(A) and (B)). Pursuant to 40 CFR 51.302(c)(4)(i), where impairment is certified at least 6 months prior to plan submission, an affected State must identify each existing stationary facility which may "reasonably be anticipated to cause or contribute" to any such impairment which is "reasonably

group of sources [see generally 45 FR 80084 (December 2, 1980)]. Recognizing certain scientific and technical limitations, EPA, in promulgating the 1980 regulations, deferred regulatory action on more "complex problems such as regional haze and urban plumes." *Id.* at 80086. Today, in accordance with the 1980 regulations, EPA is taking regulatory action to remedy visibility impairment that is reasonably attributable to NGS. The EPA is in the process of establishing the Grand Canyon Visibility Transport Commission as required by section 169B of the Act. The duties of that commission include making recommendations on "promulgation of regulations under section 169A to address long-range strategies for addressing regional haze which impairs visibility in . . ." the GCNP [section 169B(d)(2)(c)].

attributable to that existing stationary facility," and analyze for BART any facility so identified. "Reasonably attributable" impairment is impairment "attributable by visual observation or any other technique the State deems appropriate" [40 CFR 51.301(s)]. Where a State defaults on its obligations under the visibility regulations, EPA may act in place of the State pursuant to a FIP under section 110(c) of the Act, 42 U.S.C. 7410(c)², and promulgate such limitation and measures as are required to achieve

²Section 110(c) requires EPA to promulgate FIP's whenever a State fails to submit an implementation plan (or portion thereof) which meets the requirements of section 110; the Administrator determines that a plan (or portion) is not in accordance with the requirements of section 110; or the State fails to revise its plan within 60 days after notification by the Administrator in accordance with section 110(a)(2)(H).

During the House of Representatives consideration of the Conference Report on the 1977 Amendments to the Clean Air Act, Congressman Rogers reiterated that the conferees had agreed that EPA was to act where States failed to carry out their duties in implementing the requirements of section 169A. Congressman Rogers statement, in pertinent part, is as follows:

The conferees . . . rejected a motion to delete EPA's supervisory role under section 110 to assure that the required progress towards that goal [the national visibility goal] will be achieved by the revised State plan. If a State visibility protection plan is not adequate to assure such progress, the Administrator must disapprove that portion of the SIP and promulgate a visibility protection plan under section 110(c). Thus, visibility protection in mandatory federal class I areas remains a national commitment, which is nationally enforceable.

See Senate Comm. on Environment and Public Works, 95th Cong. 2d Sess. A Legislative History of the Clean Air Act Amendment of 1977 No. 16, vol. 3 at 311, 320-21 (Comm. Print 1978).

reasonable progress. In such cases, all of the rights and duties that would otherwise fall to the State accrue instead to EPA. Thus, EPA may utilize attribution techniques it deems appropriate; identify "reasonably attributable" sources of impairment, develop and implement the elements of a long-term strategy, conduct BART analyses, adopt BART requirements, where appropriate; and may promulgate such other control strategies that EPA, in its discretion, deems necessary to make reasonable progress toward the national visibility goal.

The visibility regulations promulgated at 40 CFR 51.302(c)(4)(i) require that once impairment has been certified, a State (or EPA if the State's visibility protection program addressing BART has not been approved and EPA is acting in its place) must analyze for BART any specific existing stationary facility it identifies as a "reasonably attributable" source of the impairment. Pursuant to section 169A(b) of the Act [42 U.S.C. 7491(b)] and 40 CFR 51.302(c)(4)(iii), the emission limitation representing BART for fossil fuel-fired power plants with a generating capacity in excess of 750 megawatts (MW) must be determined pursuant to guidelines promulgated by the Administrator. This statutorily-required procedure for conducting a BART analysis is found in "Guidelines for Determining Best Available Retrofit Technology Analysis for Coal-Fired Power Plants and Other Stationary Facilities"

(EPA-450/3-80-009b) (BART Guidelines). A copy of this document may be found in Docket A-89-02A.

In December 1982, environmental groups, including EDF, filed a citizens' suit in the United States District Court for the Northern District of California alleging that EPA had failed to perform a nondiscretionary duty under section 110(c) of the Act, 42 U.S.C. 7410(c), to promulgate visibility FIP's for the 35 States³ that, at that time, had failed to submit SIP's to EPA as called for by the 1980 visibility regulations, EDF v. Reilly, No. C82-6850 RPA (N. D. Cal.). The State of Arizona was one of the 35 States that failed to submit a revised SIP to EPA.

The EPA and the plaintiffs negotiated a settlement agreement for the remaining States which the court approved by order on April 20, 1984. For more information on details of the provisions of the original settlement, including a schedule of actions by EPA, see EPA's announcement of the agreement at 49 FR 20647 (May 16, 1984).

B. Settlement Agreement

To remedy the States' failure to submit the necessary SIP revisions during the time specified by the regulations, the settlement agreement replaced the original regulatory deadlines for visibility SIP provisions with a rulemaking schedule agreed to by the parties and approved by the court.

³The State of Alaska had submitted a SIP which was approved on July 5, 1983 at 48 FR 30623.

This schedule required EPA to review the existing SIP's to determine any deficiencies, allow the States to cure those deficiencies, and to promulgate FIP's on a specified schedule for those States that still did not submit visibility SIP revisions to EPA. Specifically, the first part of the agreement required EPA to promulgate FIP's which cover the monitoring and NSR provisions of 40 CFR 51.305 and 51.307. The EPA promulgated its monitoring strategy for 23 States and its NSR provisions for 21 States, including Arizona, at 50 FR 28544 (July 12, 1985), 51 FR 5504 (February 1, 1986), and 51 FR 22937 (June 1986). In separate notices, EPA approved the SIP's of the other States with respect to monitoring and NSR.

The second part of the settlement agreement required EPA to determine the adequacy of the SIP's to meet the remaining provisions of the visibility regulations and gave the States until December 1986 to submit additional measures that would avoid the need for a FIP. These provisions are the general plan provisions for achieving reasonable progress toward the national visibility goal, including BART and other implementation control strategies (section 51.302), integral vista protection (section 51.302-307), and long-term strategies (section 51.306). The settlement agreement required EPA to promulgate FIP's to remedy any deficiencies on a specified schedule.

Pursuant to 40 CFR 51.302(c)(1), on November 14, 1985, the Department of the Interior (DOI) certified the existence of visibility impairment in all Class I areas within its jurisdiction in the lower 48 States.

On January 23, 1986, EPA determined that the SIP's of 32 States (including Arizona) were deficient with respect to the remaining visibility provisions (51 FR 3046) and offered the States an opportunity to submit corrective SIP revisions. Thereafter, EPA and the plaintiffs negotiated revisions to the settlement agreement which extended the deadlines for State action or, if the States failed to respond, Federal action proposing FIP's to remedy these deficiencies. The court approved these revisions by its order of September 9, 1986.⁴

On March 24, 1986, the DOI sent letters to EPA which supplemented its earlier certification of visibility impairment. The letter addressed the GCNP and identified the NGS, a coal-fired power plant located near Page, Arizona, as a probable source of impairment in this Class I area. A copy of this letter may be found in Docket A-89-02.

Thirty-two affected States failed to submit visibility SIP revisions in response to the notice of deficiency. Consequently, in accordance with the revised settlement agreement, on March 12, 1987 (52 FR 7802), EPA proposed to

⁴A copy of the settlement agreement and revisions is available in docket A-85-26 at the address given at the beginning of this notice.

disapprove the SIP's of 32 States, including Arizona, for failing to meet the remaining provisions of the visibility regulations, including general plan requirements to achieve reasonable progress toward the national visibility goal (which in turn includes BART, long-term strategies, and other control strategies). Also in accordance with the agreement, on November 24, 1987 (52 FR 45132), EPA took final action disapproving the affected SIP's, again including Arizona. In that action, EPA also promulgated, as FIP measures under section 110(c), general plan requirements for these States. The EPA also determined that BART was unnecessary in 28 States because it could not reasonably attribute the visibility impairment of mandatory Class I Federal areas in these States to specific sources or small groups of sources. In addition, under the revised agreement, EPA deferred until August 31, 1988 a decision regarding the need for BART or other control measures in the FIP's for the States of Arizona, Maine, Minnesota, and Utah to address certified visibility impairments in seven Class I areas in these States which potentially could be reasonably attributed to a specific source, pending acquisition and evaluation of additional technical information regarding the potential sources of impairment. The EPA needed additional information to determine whether the impairment in any of these Class I areas was "reasonably attributable" to an existing stationary facility, and to enable a BART analysis

for any source so identified as causing or contributing to visibility impairment [40 CFR 51.302(c)(4)(i)].

Because all of the additional information needed by EPA was forthcoming but still not available by August 1988, the Agency sought and received a second extension, until August 31, 1989, of the deadline for issuing a rulemaking proposal regarding the need for BART or other control measures to remedy visibility impairments in three of the remaining Class I areas (Moosehorn Wilderness, GCNP, and Canyonlands National Park). With regard to the impairment in the GCNP, EPA delayed action in order to allow the National Park Service (NPS) time to analyze the data from a 1987 winter visibility attribution study, termed the Winter Haze Intensive Tracer Experiment (WHITEX), conducted in the Colorado Plateau where the GCNP is located. In the meantime, on May 19, 1989 (54 FR 21904), in accordance with the second revision to the settlement agreement, EPA promulgated final decisions concerning certified visibility impairments in four of the seven Class I areas. Based on monitoring conducted in these areas, EPA found that the visibility impairments were not reasonably attributable to any specific source at that time. Therefore, EPA determined that it was not necessary at that time to revise the FIP's for the States of Maine, Minnesota, and Arizona to include BART or other control strategies to remedy impairments in Roosevelt Campobello International Park (Canada), Voyageurs

National Park (Minnesota), Saguaro Wilderness (Arizona), and Petrified Forest National Park (Arizona).

In April 1989, EPA received a draft report on WHITEX from the NPS.⁵ Because of the delay in receiving this report, EPA believed that it lacked sufficient time to complete all actions in determining whether impairment in the GCNP was reasonably attributable to a specific source, conduct a BART analysis, and issue a proposal regarding BART or other control strategies by the August 31, 1989 deadline. Accordingly, EPA and EDF filed a joint motion to revise the settlement agreement for a third time, which was approved by order of the court dated July 6, 1989. Under this revision, there was no change in the deadlines for proposed action regarding Canyonlands National Park or Moosehorn Wilderness. As to GCNP, the third revision to the settlement agreement divided EPA's duty into two parts. The EPA would proceed, on a preliminary basis, to issue a finding on reasonably attributable impairment by the August 31, 1989 deadline. However, if EPA did provisionally identify a specific source of impairment, it would solicit comments on that finding and would have additional time to conduct a BART analysis. The EPA was to issue a rulemaking proposal on the need for BART by February 1, 1990 unless, in response to comments, EPA

⁵Malm, et al., "The National Park Service Report on WHITEX Draft Final Report" (April 7, 1989).

rejected its proposed identification and instead determined that BART was unnecessary.

In accordance with the third revision to the settlement agreement, EPA published a notice of proposed rulemaking on September 5, 1989 (54 FR 36948). Regarding Moosehorn Wilderness, EPA identified a source of the certified impairment, but proposed that BART was unnecessary at this time because the impairment would be adequately remedied by the retirement of certain existing emission units and the addition of pollution controls on other units pursuant to a permit issued under the Act's prevention of significant deterioration provisions. As to Canyonlands National Park, EPA could not reasonably attribute the certified impairment to a specific source at that time and so proposed that BART was unnecessary. On June 13, 1990 (55 FR 24060), EPA issued final decisions that BART was not necessary at that time to address impairment in either the Moosehorn Wilderness or the Canyonlands National Park.

Regarding the GCNP, in the September 5, 1989 notice, EPA preliminarily attributed a significant portion of wintertime visibility impairment to emissions from the NGS. The EPA reviewed the draft NPS report on WHITEX and concurred with the findings of the NPS that NGS is a substantial contributor to the wintertime visibility impairment. The EPA solicited comments on the merits of its preliminary attribution finding.

On November 28, 1989, the SRP, et al., and Alabama Power Company, et al., intervenors in EDF v. Reilly, filed a motion requesting a 1-year delay in the rulemaking schedule so that, among other things, the intervenors could conduct their own studies of the visibility impairment in the GCNP. By order dated January 9, 1990, the court granted the intervenors' motion to extend the deadlines. This order set February 1, 1991, as the new deadline for EPA to propose whether or not to require BART emission limits for the NGS to remedy winter visibility impairment. The order also extended the deadline for final action on any proposal regarding BART until October 1991 (6 months after the close of the comment period).⁶

⁶The EDF has appealed the extension of rulemaking deadlines in this case EDF v. Reilly, No. 90-15264 (9th Cir.). That appeal is pending. In a memorandum of understanding discussed below, parties to this litigation have agreed, in light of today's action, to petition (a) the Ninth Circuit to vacate the judgment below and remand the matter to the court below with instructions to dismiss and (b) the District Court for the Northern District of California to dismiss EDF v. Reilly, No. C82-6850.

C. Navajo Generating Station

The NGS is a 2250 MW coal-fired power plant located near Page, Arizona, approximately 20 kilometers from the northern boundary of the GCNP. The NGS is a baseload generating station consisting of three 750 MW units which became operational between 1974 and 1976. The SRP is the operating agent for NGS which is jointly owned by the SRP,⁷ the Los Angeles Department of Water and Power, the Arizona Public Service Company, the Nevada Power Company, and the Tucson Gas and Electric Company. Existing pollution control equipment at NGS include electrostatic precipitators for particulate matter (PM) removal and specific burner design for nitrogen oxides (NO_x) control.

D. February 8, 1991 Proposal

On February 8, 1991, EPA proposed to revise the FIP for Arizona to include emission limits to address the visibility impairment observed in GCNP. The following is a summary of the main issues discussed in the proposal notice:

1. Emission limitation

The EPA proposed to adopt a continuous SO₂ emission limitation of 0.30 lbs/MMBtu. Compliance would be determined on a 30-day rolling average and would be phased in between 1995 and 1999. Because of the uncertainty in

⁷The Salt River project owns 21.7 percent of the project for its own use and benefit, and 24.3 percent for the use and benefit of the United States in accordance with the project agreements.

determining the improvement in visibility expected as a result of reducing emissions at the NGS, EPA solicited comments on three specific alternative emission limitations at NGS:

a. A continuous SO₂ emission limitation of 0.50 lbs/MMBtu. Compliance would be determined on a 30-day rolling average and would be phased in between 1995 and 1999.

b. A continuous SO₂ emission limitation of 0.10 lbs/MMBtu. Compliance would be determined on a 30-day rolling average and would be phased in between 1995 and 1999.

c. A January 10, 1991, proposal submitted by SRP under which it would test alternating control technologies and if one of the technologies met a minimum removal efficiency at a set cost the NGS would install that technology and operate it in the wintertime. If none of the technologies met the test criteria, NGS would reduce its emissions by 70 percent (0.30 lbs/MMBtu emission limit) measured on an annual basis by the year 2000.

In addition, EPA requested comment on whether another emission limitation or a different averaging period may be more appropriate.

2. Attribution

As part of the February 8, 1991 proposal, EPA reopened the comment period on its September 5, 1989, preliminary

finding that a significant portion of wintertime impairment in the GCNP was reasonably attributable to NGS. The EPA noted both in the September 1989 and the February 1991 notices that the finding was not based on any single analytical technique in the NPS report on WHITEX, but rather on the collection of techniques performed by the NPS using WHITEX and other data. In detail, EPA explained that all of the techniques used by the NPS support the conclusion that NGS is a significant contributor to visibility impairment in the Grand Canyon during the winter months. Also, in some detail, EPA discussed the National Academy of Science's (NAS') review of the WHITEX study and discussed other visibility studies performed subsequent to WHITEX.

The National Research Council of the NAS reviewed and reported on the scientific methods used in the WHITEX report. The NAS report, entitled "Haze in the Grand Canyon: An Evaluation of the Winter Haze Intensive Tracer Experiment" (October 1990), contained a qualitative assessment of WHITEX which supported EPA's finding that, on some days, NGS contributes significantly to haze in the GCNP.⁸ The NAS report has been placed in the rulemaking

⁸The report found, for example, that the detection at Hopi Point (GCNP) of the unique tracer released from NGS in the WHITEX study "is an unambiguous indicator that air parcels containing NGS emissions did impinge on the GCNP on several occasions." Executive Summary at p. 3.

docket.⁹ The report also found that the data base and data analyses techniques in the WHITEX report reviewed by NAS, were not, standing alone, sufficient to ascertain the quantitative NGS contribution to haze at any given time.

The SRP has conducted another study known as the Navajo Generating Station Visibility Study (NGSVS). That study attempted to measure the degree of contribution by the NGS to visibility impairment in the GCNP during the 1989-1990 winter season and to assess the level of improvement expected as a result of reducing the SO₂ emissions at NGS. The SRP submitted a draft report describing that study and its results¹⁰ during the public comment period on EPA's February 8, 1991 proposal. The NSVS concluded that NGS emissions were present at Hopi Point less frequently than during the WHITEX period. In addition, the NSVS concluded that on days when NGS emissions were present, visibility impairment at Hopi Point associated with those emissions was substantially less than the amount calculated in the NPS report on WHITEX.

3. BART Analysis

In light of its attribution finding, EPA conducted an analysis in accordance with the BART Guidelines (EPA-450/3-

⁹Additional copies of this report are available from the National Academy Press, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

¹⁰Sonoma Technology Inc. "Navajo Generating Station Visibility Study", Draft Number 2, April 16, 1991.

80-009b) and 40 CFR 51.301(c)(4)(iii).¹¹ That analysis included consideration of the following: the costs of compliance, the energy and non-air quality environmental impacts, any existing pollution control technology in use at the facility, the remaining useful life of the source, and the degree of improvement in visibility anticipated to result from application of controls.

Considering the requirements found in the BART Guidelines, EPA divided its analysis into two major parts. In the first part, EPA identified the SO₂ emission controls that are readily available to the source, the costs of such controls, and other impacts of installing and operating the controls. In the second part of the analysis, EPA attempted to define the source-impairment relationship which was then used to predict the improvements in visual air quality that can reasonably be expected to occur as a result of installing and operating the controls defined in the control technology analysis. Because EPA was faced with some uncertainties in each of the parts of the analysis, EPA bounded its results by giving low and high estimates. A detailed discussion of this analysis for NGS was provided in EPA's February 8, 1991 proposal.

¹¹U.S. EPA, "Draft Report on Best Available Retrofit Technology (BART) Analysis for the Navajo Generating Station in Page, Arizona," January 1990. A copy this document has been placed in Docket A-89-02A.

To estimate the cost of controlling the SO₂ emissions at NGS, EPA used the Integrated Air Pollution Control System (IAPCS) cost model to predict the capital and operating cost estimates for 0.10, 0.30, and 0.50 lbs/MMBtu control levels.¹² The results from IAPCS indicated that wet flue gas desulfurization (FGD) achieving a 0.30 lbs/MMBtu emission limit for all three units, the control level that was proposed by EPA, was estimated to have total capital cost requirements of between \$245.9 million and \$402 million with total levelized annual costs (including amortized capital, interest, operating, and maintenance costs) estimated to be between \$91.9 million and \$128.3 million.¹³

Although not a required inquiry in the BART analysis, in its February 8, 1991 proposal, EPA also estimated the potential costs to residential electricity customers serviced by the NGS participants as well as the potential costs to Central Arizona Project customers.

One of the more complicated tasks in the BART analysis was defining the relationship between the SO₂ emissions at NGS and the visibility impairing sulfate in the GCNP. This relationship had to be addressed in order to estimate the degree of improvement in visibility that could be

¹²Integrated Air Pollution Control System Costing Program, Version 3.0, copyright PEI and Associates, Inc., 1989.

¹³All dollar amounts were measured in 1988 dollars.

anticipated to result from the use of the alternative SO₂ control systems. Because of the complex terrain in and around the GCNP, EPA defined the source/impairment relationship using the ratio of SO₂ emissions at NGS to sulfate in the GCNP attributable to NGS as found in the final WHITEX report. Using this ratio, EPA then applied a linear rollback model. However, in light of the uncertainties surrounding these analyses EPA considered a broad range of source-impairment relationships. In addition, EPA developed and applied a nonlinearity factor to the rollback model to estimate the improvements in visibility that would result from reductions in SO₂.

Because no single standard method exists for measuring improvements in visibility, the EPA employed two of the most widely used techniques to define the improvements in visibility expected to occur in the GCNP.

One of the methods used to estimate the visibility improvements in the GCNP was analyzing the changes in contrast expected to occur as a result of reducing SO₂ emissions at NGS. The EPA stated in the proposal that this method is particularly relevant because human observers use contrast to make judgments of how atmospheric clarity changes with pollutant concentration. The contrast is defined as the percent difference between the brightness of a scenic element and its background.

Using the information obtained during the WHITEX study and extrapolating it to a period from November 1 through March 31 based on historic particle composition data (and applying the nonlinearity factor), EPA estimated the number of days with a "perceptible" change in the visibility conditions (4 percent change in contrast), a "quite noticeable" change in visibility conditions (10 percent change in contrast), and a "very apparent" change in visibility conditions (20 percent change in contrast) which would occur if NGS SO₂ emissions were reduced to 0.30 and 0.10 lbs/MMBtu.

In addition to analyzing the changes in contrast in order to describe the improvement in seasonal average visibility expected to occur as a result of controlling SO₂ emissions at NGS, the EPA also estimated the improvements in visual range expected to occur at 0.10 and 0.30 lbs/MMBtu SO₂ emission limits. In its proposal, EPA estimated that the average wintertime visual range would improve 11 percent if NGS had to meet a 0.30 lbs/MMBtu emission limitation and would improve 14 percent if NGS had to meet a 0.10 lbs/MMBtu emission limit.

Although not specifically addressed in the BART analysis the proposal, noted that EPA and NPS suspected that NGS emissions may contribute to visibility impairment in the GCNP during other seasons of the year and in other Class I

areas in the region. Thus, EPA sought comment on other potential visibility impairment caused by NGS.

The EPA also noted in the proposal that it was not required as a part of its analysis to estimate monetary benefits associated with improving visibility in the GCNP. However, EPA evaluated the monetary benefits in developing a part of the preliminary Regulatory Impact Analysis (RIA) (as required by Executive Order 12291) for the proposed rule.

4. Control of Particulate Matter and Nitrogen Oxides

In the February 8, 1991 proposal, EPA noted that two other pollutants emitted by NGS, NO_x and PM, are known to contribute to visibility impairment in some circumstances.¹⁴ The current emissions of NO_x and PM from NGS were not identified as significantly contributing to the visibility impairment in the Grand Canyon. However, EPA expressed concern based upon its technical judgment regarding the behavior of the pollutants as potential contributors to visibility impairment as a general matter, upon the amount of the pollutants emitted by NGS, upon the proximity of NGS to the GCNP and upon the characteristics of the NGS plume shown by WHITEX and other studies, that increased emissions of these pollutants could result in impairment in the GCNP. The EPA noted that although the NGS is not subject to any NO_x emission limitations, SRP has stated that NGS currently emits NO_x at a rate of 0.4 to 0.5

¹⁴See, e.g., BART Guidelines at 12-13.

lbs/MMBtu. Therefore, EPA proposed an NO_x emission limit consistent with NGS's existing emission rate, as well as the rate at other similar plants, of 0.5 lbs/MMBtu.

The EPA noted that PM emissions for the NGS are currently limited in two ways. The Arizona SIP has both an emission rate limitation of 0.06 lbs/MMBtu and an opacity limit of 40 percent for NGS. The SRP has stated that NGS currently emits PM at a rate of 0.03 lbs/MMBtu with an opacity of between 10 and 15 percent. Thus, the opacity limit of 40 percent is well above the NGS existing emissions. Therefore, EPA proposed a 20 percent opacity limitation consistent with current NGS emissions in order to preclude any visibility deterioration that would be caused by an increase in PM emissions.

The EPA requested comments on whether NO_x and PM emission limits would be appropriate for NGS.

5. Compliance Schedule

The EPA proposed to require that the emission limitation be achieved in three phases. Specifically, EPA proposed that the final emission limitation would need to be met on one unit by January 1, 1995; on two units by January 1, 1997; and on all three units by January 1, 1999. The EPA solicited comments on whether the phased-in compliance schedule proposed was appropriate as a matter of law or policy, and, as noted, requested comment on the January 1991

SRP proposal that a final emission limitation not become effective before January 1, 2000.

6. Use of Seasonal Controls

Part of the SRP proposal called for the use of seasonal controls. Therefore, EPA solicited comment on the use of seasonal controls. In the February 8, 1991 notice, EPA noted that such controls would have to be both technically and legally justified before they could be used.

7. Other Issues

In the February 8, 1991 proposal, EPA also specifically solicited comments on the following:

- Use of continuous emission monitoring systems for compliance determinations,
- Plant-wide averaging of the emission limitations, and
- Other available technologies which can reduce SO₂ emissions at NGS to achieve the proposed or alternative limits and which may require less capital investment and/or operating expenses than those technologies evaluated in the BART analysis.

In addition to soliciting written comments during the comment period, EPA held a public hearing on March 18 and 19, 1991 in Phoenix, Arizona. A copy of the transcript of the hearing is in Docket A-89-02A. As a result of the comment period and public hearing EPA received over 400 comments on its proposal. All the comments have been placed in Docket A-89-02A.

Because of the differences in technical opinions expressed and data analyses submitted to EPA during the comment period, EPA sponsored a technical review meeting on April 25 and 26, 1991. The EPA invited the NGS participants and the environmental groups who submitted technical information to EPA to send technical representatives to the meeting to discuss the interpretation of the available data. The meeting was open to the public and a summary of it is included in Docket A-89-02A.

E. New Information After the Close of the
Initial Comment Period

After the comment period closed on April 19, 1991, at the recommendation of EPA, representatives of SRP, GCT, and EDF met to discuss alternative approaches to EPA's February 8, 1991 proposal. In August 1991, the outside parties reached agreement and together recommended that EPA adopt an alternative control for NGS consisting of a 0.10 lb/MMBtu SO₂ emission limitation (approximate to a 90 percent control level) based on a rolling annual average and phased in by unit in November 1997, November 1998, and August 1999. In addition, under the agreement, NGS would shift its maintenance schedule such that six unit-weeks of planned maintenance would occur between November 1 and March 15 each year. Under specific conditions, the Administrator of EPA may allow NGS to shift the maintenance schedule

outside of that period or not to conduct scheduled maintenance in a given year.

Representatives of EPA participated in many of the meetings with the parties and provided technical assistance. Representatives of the State of Arizona also attended several of the meetings and provided additional technical support. New technical materials and cost information, including adjustments of the potential control costs were exchanged between the parties and EPA. Summaries of the meetings and significant conversations in which EPA was involved and copies of the new material and information which were submitted to or developed by EPA have been included in Docket A-89-02A.

The outside parties memorialized their agreement in an MOU which they submitted to EPA along with recommended regulatory requirements for EPA's final rulemaking action. The SRP estimated (in 1992 dollars) a capital cost of \$430 million and a total levelized annual cost of \$89.6 million for the parties' alternative. The SRP also estimated a capital cost of \$510 million and total levelized annual cost of \$106 million to meet the alternative EPA proposed in February 1991.

Noting that the alternative incorporated in the MOU would provide more visibility protection for the GCNP at a lower cost for NGS and its customers, EPA, on August 8, 1991, reopened the comment period on its February 8, 1991

proposed action (56 FR 38399, August 13, 1991). In the notice EPA stated that it was giving serious consideration to the control option recommended by the outside parties and incorporated in an appendix to the notice a memorandum from EPA's Office of General Counsel concluding that the outside parties' legal rationale in support of their recommended control option was meritorious.

The EPA reopened the comment period until September 9, 1991. Where addresses were available, commenters on the February 8, 1991 proposal were notified by mail of the reopened comment period in order to facilitate their ability to comment.

The EPA received 13 comments during the supplement comment period. Twelve of the commenters supported the alternative incorporated in the MOU and one opposed it. The SRP, GCT, EDF, the Wilderness Society, the National Wildlife Federation, and the Sierra Club withdrew the previous comments which were inconsistent with a rule which is consistent with the MOU.

TODAY'S ACTION

In today's action EPA is promulgating its final determination on the attribution to NGS of visibility impairment in GCNP and is promulgating federal revisions to the visibility implementation plan for Arizona to address that impairment. As discussed below, EPA has concluded that visibility impairment of GCNP is "reasonably attributable"

to NGS and that NGS is a significant contributor to certain visibility episodes. The EPA also finds today that a 0.10 lbs/MMBtu SO₂ emission limitation (approximately a 90 percent emission reduction) based on a rolling annual average and phased in by unit in November 1997, November 1998 and August 1999, in addition to scheduled winter maintenance at NGS affords greater visibility improvement than the alternative advanced in EPA's February 1991 proposal. In particular, it will reduce by two-thirds the amount of pollution allowed under the proposed rule. In addition, EPA finds that the final rule will be significantly less costly than the proposal. Consequently, EPA further concludes that today's final action will provide a greater degree of "reasonable progress" toward the national goal of remedying such impairment than would be provided by the February 1991 proposal [see section 169A(b)(2) of the Clean Air Act, 42 U.S.C. §7491(b)(2)].

In EPA's August 1991 supplemental notice requesting comment on the rulemaking alternative largely adopted in final form today, the Agency noted that SRP, GCT, and EDF had recommended that the legal rationale in support of this alternative be the requirement in section 169A(b)(2) of the Act that implementation plan revisions addressing visibility impairment achieve "reasonable progress" toward the national visibility goal. The supplemental notice also indicated that EPA's Office of General Counsel had reviewed the matter

and concluded, subject to any significant points that may be raised in the reopened comment period, that EPA could rely on the reasonable progress provisions as the basis for this alternative. No significant adverse comments were received on this issue. Accordingly, EPA is adopting this rationale as discussed in the supplemental notice.

Today's action is based upon the material in the docket including EPA's review and consideration of all comments received during the comment periods and at the public hearing. The agreement between GCT, EDF, and SRP and associated recommendations to EPA, largely adopted in final form today, also are in the docket. The EPA has responded to all of the significant comments received. Some responses are provided later in today's notice. Additionally, EPA has prepared a document accompanying today's action, "Response to Public Comments: Proposed Revisions to Arizona Visibility FIP for Navajo Generating Station," which responds to comments. This document has been placed in Docket A-89-02A.

A. Attribution

The EPA regulations promulgated on December 2, 1980 "[r]equire the control of impairment that can be traced to a single existing stationary facility or small group of existing stationary facilities . . . " (45 FR 80085). Accordingly, EPA's regulations currently cover existing sources "which may reasonably be anticipated to cause or

contribute to impairment of visibility in any mandatory Class I Federal area" where the impairment is "reasonably attributable" to that source by visual observation or other techniques deemed appropriate by the State. The EPA, acting for the State under section 110(c) of the Act, deems the techniques in the WHITEX report, the NGSVS report and other data and analyses in the docket appropriate techniques for determining reasonable attribution in this case for the following reasons:

1. The unique tracers, deuterated methane (CD_4) used in the WHITEX study and perfluorocarbons used in the NGSVS, injected into the emissions of NGS were observed in substantial quantities at Hopi Point during periods of episodic visibility impairment;

2. The NGS is the predominate source of SO_2 in the region;

3. SO_2 released by a power plant converts into sulfates through chemical transformation in the atmosphere;

4. Meteorological data shows that the NGS plume easily can, and frequently does, travel to GCNP; and

5. The data and analyses in the docket show that sulfates are the major contributor to visibility impairment in GCNP.

The EPA recognizes that NGS is not the only source of visibility impairment at GCNP. Under the applicable statutory provisions and regulations, however, this is not

determinative.¹⁵ (see generally section 169A of the Act and 40 CFR 51.300-307). Moreover, even though WHITEX and NGSVS contain some scientific uncertainty, they are technically adequate for the regulatory purposes at hand, as they both showed that at certain times a significant portion of the visibility impairment in the GCNP can be reasonably attributed to NGS. Accordingly, EPA concludes today that visibility impairment of the GCNP is "reasonably attributable" to NGS and NGS is a significant contributor to certain visibility episodes. Notwithstanding that other sources also may contribute to the impairment of GCNP, EPA concludes that the addition of emissions controls at NGS alone will result in a significant improvement in visibility

¹⁵ For example, under section 169A(b)(2) of the Act EPA is authorized to require visibility implementation plans containing "emission limits, schedules of compliance and other measures" necessary to make reasonable progress toward meeting the national visibility goal [see also 40 CFR 51.302(c)]. The national visibility goal, in turn, calls for the remedying of "any" manmade visibility impairment in Class I areas [see section 169A(a)(1) and 40 CFR 51.300(a)]. As noted, EPA's regulations implementing section 169A address visibility impairment that is reasonably attributable to a single source or small group of sources and deferred action on complex problems such as regional haze [see generally, 45 FR 80084 (December 2, 1980)]. Accordingly, as provided in the 1980 regulations, EPA may remedy through emission limits, schedules of compliance, or other measures "any" visibility impairment that is reasonably attributable to an existing stationary source or small group of sources [see also section 169A(c) of the Act and 50 CFR 51.303 (authorizing an exemption from control requirements only where a plant does not "by itself or in combination with other sources" emit pollution "which may reasonably be anticipated to cause or contribute to significant impairment of visibility" in any Class I area and affirms, by negative inference, EPA's broad rulemaking authority)] (emphasis added).

at GCNP and will make "reasonable progress" toward meeting the national visibility goal.

B. Control Technology

As part of the BART analysis¹⁶ for the February 1991 proposal, EPA reviewed the available control technologies as well as the environmental impact of the use of such technologies and the estimated costs of installing and operating such equipment. In today's action EPA is not requiring the use of any particular control technology. Rather, EPA is establishing an emission limitation and NGS has the discretion to select and instal the type of control system which best meets its needs. The available information in the docket indicates that a wet FGD system will be the economical proven control technology for meeting the 0.10 lbs/MMBtu emission limitation at NGS.

As a result of new information provided by SRP, EPA has revised and updated its cost estimates for the installation and operation of a wet FGD system. The revised estimated capital cost and total levelized annual cost to meet the emission limitation EPA proposed in February 1991, in 1992 dollars, are \$510 million and \$106 million, respectively. The estimated capital cost and that the total levelized annual cost, in 1992 dollars, to meet the emission limitation promulgated today, are \$430 million and \$89.6

¹⁶U.S. EPA "Draft Report on Best Available Retrofit Technology (BART) Analysis for the Navajo Generating Station in Page, Arizona" January 1990.

million, respectively. Although not considered in these cost estimates, EPA expects that NGS will be able to recoup a portion of the control costs by the sale of excess marketable allowances which it will receive as part of the allowance trading program that EPA is establishing under Title IV of the Act.

Based on the information submitted during the comment period by SRP and Nevada Power Company (NPC) and the above cost figures, EPA has estimated that the average SRP and NPC customers electric bills will increase approximately \$1.72 and \$1.57 per month, respectfully. The customers of the other utilities will have smaller increases in their electric bills. Commenters representing Central Arizona Project (CAP) customers submitted information showing that water cost would increase between \$4.10 and \$4.50 per acre-foot based on EPA February 1991 proposal. Since the cost figures for the final action are lower than figures used for these estimates, the increase in water costs for the CAP customers is expected to be less than \$4.10 to \$4.50 per acre-foot.

C. Control Strategy

The EPA has adopted the combination of a higher level of control, compliance phased in by unit in 1997, 1998 and 1999, an annual averaging period, and scheduled winter maintenance as a control strategy for NGS--the alternative recommended to the EPA by GCT, EDF and SRP and identified in

EPA's August 1991 supplemental notice--because it better addresses the two visibility effects of concern at a lower cost than the proposal in EPA's February 1991 notice. As highlighted here and elsewhere the control strategy for NGS must be viewed as a whole and not as severable parts. The EPA carefully has weighed the relevant statutory and regulatory consideration and concluded that, taken in its entirety, today's control strategy for NGS will provide a greater degree of reasonable progress toward the national goal at a lower cost than EPA's February proposal.

Essentially, the SO₂ emissions from NGS can contribute to two types of visibility impairment. The major impact of NGS is its dominant impact during certain episodic visibility impairment events, usually during the winter. This impact has been observed in winter studies (WHITEX and NGSVS) as well as intense aerosol monitoring within the canyon since 1989.¹⁷ The other concern addressed by the control strategy in today's action is the less intense impairments which (1) occur at the GCNP during seasons other than winter, and (2) occur at other nearby mandatory Class I Federal areas.¹⁸

¹⁷The NPS in-canyon data.

¹⁸ See, e.g., Latimer, Douglas, "Haze Impacts on the Golden Circle of National Parks of Sulfur Dioxide Emission from Navajo Generating Station: Haze Puff Model Calculations for 1986-90."

The lower level of NGS SO₂ emissions required by the 0.10 lbs/MMBtu emission limitation adopted today will afford GCNP greater protection from episodic events than an emission limitation which allows significantly more SO₂ emissions but is averaged over a shorter period, such as the 0.30 lbs/MMBtu emission limitation proposed by EPA in its February 1991 notice. The probability of high NGS contribution to severe episodic sulfate impairment events is limited by the known design reliability of current technologies which will achieve the required 0.10 lbs/MMBtu emission limitation as well as the scheduled winter maintenance requirement. Thus, EPA believes that despite the use of an annual averaging time, the significant increase in control level, expected reliability of the control technology, and winter maintenance, taken together, will for the most part prevent continuation of severe winter episodes caused by NGS. At the same time, the annual average lowers the costs of compliance.

With respect to long-term visibility impacts on the Golden Circle area (the other Class I areas in the Colorado Plateau) there is little doubt that the lower emission rate over a year's average will reduce NGS's contribution to sulfate formula and thus to sulfate-caused impairment more than the control level proposed by EPA in February 1991. Given NGS's central location in relation to many Class I areas, no matter what meteorological events occur over a

multi-year period, it is likely that the sulfates originating from NGS and transported to surrounding Class I areas will be reduced in proportion to the difference in emission limitations, i.e., to one-third of the levels in the February 1991 proposal.

Further, during the comment period on the February 1991 proposal, EPA received technical information demonstrating that NGS contributes to visibility impairment at GCNP in non-winter seasons.¹⁹ For the reasons just discussed, the significantly lower emission rate required today must inevitably, over the long-term, curb NGS's contribution to visibility impairment in the GCNP during seasons other than winter to a greater degree than EPA proposed option.

Accordingly, the control scheme adopted today for NGS is appropriate for addressing the winter episodic visibility impairment observed at the GCNP and will also reduce the long-term, long-range impairment that NGS emissions may contribute to during other seasons at GCNP and at other nearby Class I areas.²⁰

¹⁹See Docket A-89-02A item IV-D-171.

²⁰ As noted, section 169A of the Act establishes a national visibility goal, not an air quality standard or a specific emission standard. While the objective is to attain the goal, EPA's mandate from Congress only is to make reasonable progress toward the goal. For these reasons, EPA has more flexibility in selecting a control strategy to meet the visibility reasonable progress requirements than it does when a health-based air quality standard or specific emission standard must be met. Thus, in determining reasonable progress, EPA by law must consider the costs of compliance, the time necessary for compliance, and the

D. Emission Limitation

After reviewing the option recommended by SRP, EDF, and GCT in their MOU, EPA has determined that such a control strategy will provide a substantially greater degree of emissions reduction, and a correspondingly greater degree of visibility improvement, at a substantially lower cost than the alternative proposed in February 1991.²¹ For these reasons, EPA also concludes that this option will make additional reasonable progress towards attainment of the national visibility goal in comparison to the February 1991 proposal. Thus, in today's action EPA is promulgating an SO₂ emission limitation of 42 ng/J (0.10 lbs/MMBtu) heat input, to be phased in by unit in November 1997, November 1998, and August 1999, with compliance determined on a rolling annual average basis.

energy and non-air quality environmental impacts of compliance [see section 169A(g)(1) of the Act]. Consideration of the pertinent statutory scheme and these specific factors has informed several aspects of today's action. Thus, for the policy and legal reasons stated, an annual rolling average emission limitation is acceptable for this case. However, use of an annual average today is not intended to be a precedent for its use in other circumstances such as for attaining a health-based standard. Moreover, while this emission limitation is not expected to interfere with attainment of any other requirement of the Act, its adoption does not relieve NGS of any responsibility for meeting any air quality standard, emission standard, or other requirement of the Act.

²¹In the August 1991 supplemental notice, EPA published and requested comment on the parties' August 8, 1991 MOU and associated documents. During the public comment period, the parties further clarified their agreement and submitted a revised version of their MOU and recommended regulatory requirements to EPA, both documents dated August 22, 1991.

Under today's final action, compliance with the annual rolling average will be determined by computing a weighted plant-wide average of the SO₂ emission rate based on the daily SO₂ emission rate and the electric energy generated for the previous 365 "boiler operating days" for each unit.²² The EPA was concerned that the plant-wide average reflect the actual release of emissions at the plant. Therefore, after consultation with representatives of SRP GCT and EDF, EPA settled on a methodology that appropriately weights the emissions from each unit before calculation of the plant-wide average. The EPA has used the daily electric energy generated as a weighting factor because that information is readily available for each unit and in this case is proportional to the heat input to the boilers. Specifically, compliance will be determined as follows:

1. For each unit that has accumulated at least 365 boiler operating days since the passage of the starting date applicable to it, the plant must measure and record the SO₂ emission rate and the electric energy generated on each

²²A "boiler operating day" is specific for each steam generating unit at NGS and is defined as a 24-hour calendar day (the period of time between 12:01 AM and 12:00 midnight in Page, Arizona) during which coal is combusted at that NGS unit for the entire 24 hours. This definition is consistent with the definition for "boiler operating day" in 40 CFR 60.41a: "a 24-hour period during which fossil fuel is combusted in a steam generating unit for the entire 24 hours." The EPA notes that the set previous 365 boiler operating days for each unit will be unique to that unit and thus the same set of calendar days probably will not be used for all three units.

boiler operating day. The SO₂ emission rate will be computed using the data from the required continuous emission monitoring system (CEMS) for the unit and using method 19, Appendix A, 40 CFR 60. The electric energy generated, in megawatt-hours, will be recorded from the megawatt-hour meter for the unit.

2. For each unit the previous 365 boiler operating days will be identified.

3. For each such day the product of the SO₂ emission rate and the electric energy generated will be computed.

4. The 365 products for each unit will be added.

5. The electric energy generated for same days for each unit will be added.

6. The sums of the product of the SO₂ emission rate and the electric energy generated will be divided by the sum of the electric energy generated to produce a plant-wide weighted annual average SO₂ emission rate for comparison with the emission limitation to determine compliance.

Recording and computation of the daily electric energy generated and SO₂ emission rates will commence on:

- November 19, 1997 for the first unit,
- November 19, 1998 for the second unit, and
- August 19, 1999 for the third unit.

The NGS has the discretion to determine which of its three units will be controlled first and second.

In the discussion below, EPA has recognized that certain difficulties encountered during the first year of operation of a control system or the catastrophic failure of a control system may, based on EPA judgment warrant a limited exclusion from compliance with the emission limitation. However, as discussion below indicates, the control system, as a general matter, must be optimally operated consistent with good engineering practices to keep emissions at or below the emission limitation.

For each unit, in determining compliance with the annual average emission limitation during the first year of operation of the control equipment installed to comply with this emission limitation, periods during which one of the following conditions are met will be excluded:

1. Equipment or systems do not meet designer's or manufacturer's performance expectations.
2. Field installation including engineering or construction precludes equipment or systems from performing as designed.

The periods to be excluded will be determined by the Administrator based on periodic reports of compliance with this emission limitation which must identify the times proposed for exclusion and provide the reasons for the exclusion, including the reasons for the outage of the control system. The report also must describe the actions taken to avoid the outage, to minimize its duration, and to

reduce SO₂ emissions at the plant to the extent practicable while the control system was not fully operational.

Whenever the time to be excluded exceeds a cumulative total of 30 days for any control system, the NGS owner or operator must file a report within 15 days addressing the history of and prognosis for the performance of the control equipment.

In addition to the foregoing, the Administrator will exclude from the compliance determination for a unit any periods of emissions from a unit for which the Administrator finds that the control equipment is out of service because of catastrophic failure of any control system which occurred for reasons beyond the control of the NGS participants and operators and could not have been prevented by good engineering practice. The Administrator will not exclude the period if the equipment failure was a consequence of a lack of appropriate maintenance, of intentional or negligent conduct or omissions of the NGS participants or operators or the control system design, construction, or operating contractors.

The final regulation requires that all equipment needed to comply with this regulation to be optimally operated consistent with good engineering practice to keep emissions at or below the emission limitation. The regulation also requires that following any control system outages, the system must be returned to full operation as expeditiously as practicable.

The final regulation provides that continuous emission monitors must be installed to determine compliance with the emission limitation. This equipment must meet the specifications listed in Appendix B of 40 CFR Part 60, the quality assurance procedures in Appendix F of 40 CFR Part 60, and the requirements for estimating emission rate in ng/J (or lbs/MMBtu) set out in method 19 Appendix A, 40 CFR Part 60.²³ The NGS is required to report emissions and maintain records in accordance with the procedures in 40 CFR 60.7. In addition, EPA is establishing special notification procedures when an outage of a control system occurs. The NGS must notify the Administrator by telephone or by writing within one business day of any outage of the control system needed for compliance with the emission limitation and must submit a follow-up written report within 30 days of the repairs stating how the repairs were accomplished and justifying the amount of time taken for the repairs.

²³For certain requirements in today's action (e.g., monitoring, reporting, recordkeeping, etc.), EPA has relied on its regulations governing standards for performance for new stationary sources. Those regulations have been relied on because they contain standardized procedures and requirements which apply to coal-fired steam generating units. In addition, EPA has provided that the NGS owners or operators must comply with the requirements relied on in 40 CFR Part 60 as in effect today. This approach was agreed to and recommended to EPA by SRP, GCT, and EDF in their August 22, 1991 MOU and associated documents. At this time, EPA believes that reliance on the regulations as they currently exist is reasonable in that they appear to provide adequate technical methods and procedures for determining and monitoring compliance with the SO₂ emission limitation established today.

In the February 1991 notice, EPA proposed new NO_x and opacity limits on NGS emissions. The EPA does not have any guidance at this time that NO_x or PM (which are limited by opacity limitations) emissions from NGS contribute significantly to visibility impairment in the GCNP. Although, as noted previously, this regulation does not require the use of any particular control technology to meet the emission limitation, the proven readily available technology that will achieve the required SO₂ reduction will not increase existing PM or NO_x hourly emission rates from NGS. In addition, NGS is a baseload plant already operated at a high capacity factor and EPA has determined that the installation of control equipment will not cause operations at NGS to increase. Accordingly, EPA has determined that compliance with today's SO₂ emission limitation will not result in an increase in overall emissions of NO_x or PM at NGS. Thus, EPA finds no need to include additional emission limitations for these pollutants at this time in order to prevent increased emissions of those pollutants.

E. Source/Impairment Relationship

As noted in the February 8, 1991 proposal, EPA provided calculations of the relationship between reductions in SO₂ emissions from NGS and the visibility at the GCNP. The calculations were based on the overall findings of the WHITEX report which used several techniques to apportion NGS's contribution to sulfates and the resulting haze at

GCNP. The EPA's calculations used to estimate the distribution of days when the reduction in SO₂ emissions from NGS would result in perceptible, quite noticeable, and very apparent change in visibility conditions in GCNP were in error because the final contrast assessment did not take into account natural (Rayleigh) atmospheric scattering of light. The seasonal visual range changes in the February 1991 proposal which were based on a simple rollback model applied to average NGS contribution during the entire WHITEX study period. Based on this model, a 0.10 lbs/MMBtu SO₂ emission limitation on NGS should result in an approximate 14 percent improvement in seasonal average standard visual range at Hopi Point.

The major change in the seasonal average visibility results from more dramatic improvements expected to occur as a result of the reducing emissions from NGS during certain meteorological conditions. Recent measurements of peak winter sulfate levels in the canyon approach four times the average winter levels. For certain periods analyzed in WHITEX and in NGSVS, NGS was shown to be the dominant contributor (more than 50 percent) to sulfates measured at Hopi Point. If certain humidity and wind conditions occur during the period when these episodes are formed, reducing NGS emissions could result in increases in standard visual range up to 300 percent. Given the variability in meteorological conditions throughout the winter and from one

winter to the next, it is impossible to exactly quantify the peak episodic expected improvement for any given period.

During the comment period on EPA's February 1991 proposal, SRP submitted the results and analyses of the NGSVS which included estimates of NGS' contribution to seasonal average visibility impairment in GCNP, specifically focused on Hopi Point. The general conclusion of the NGSVS was that a SO₂ emission limitation of 0.10 lbs/MMBtu would result in approximately a 2 percent improvement in the seasonal average standard visual range.²⁴

Another study²⁵ submitted during the comment period, which was based on modelling of NGS' emission over a long time period, indicated average wintertime improvements in the range of 4 to 8 percent if NGS emissions are reduced. This study is not based on any specific monitoring period nor was it based on an EPA-approved model.

The two intensive studies, WHITEX and NGSVS, included detailed aerosol, wind flow, and tracer analyses. They represent snapshots of NGS's impacts for their respective study periods. Based solely on wind flow analysis during these periods, these studies varied significantly in concluding how often NGS emissions would be transported

²⁴Average of the total light scattering to that part apportioned to NGS over the entire study period as found in Appendix G of the NGSVS, Final Report, Draft Number 2, Sonoma Technology, Inc., April 16, 1991.

²⁵See Docket A-89-02A item IV-D-171.

directly to the Hopi Point, the common GCNP monitoring site for both studies.

Photographic data taken during WHITEX indicated that airflow below the rim of the canyon could result in higher visibility impairment due to trapping of pollution. As a result, a new aerosol monitoring site at Indian Gardens (4000 feet below the rim of the canyon) was established after the WHITEX study. This site has provided information since 1988 which indicates that the transport and conversion processes below the rim of the canyon are sometimes decoupled from the processes above the rim which were represented by the Hopi Point site used for analyses in WHITEX and NGSVS. Data submitted during the comment period show that visibility below the rim is impaired more often and to a greater degree than is the visibility above the rim at Hopi Point.²⁶

Taking into account the conclusions from both studies as well as other monitoring information at GCNP from long-term monitoring, EPA expects that reducing SO₂ emissions from NGS to 0.10 lbs/MMBtu should improve the winter seasonal average visibility above the rim of the canyon of approximately 7 percent. Analyses of peak in-canyon sulfate levels during winter inversion episodes also lead EPA to conclude that reductions in NGS SO₂ emissions may well

²⁶See Docket A-89-02A, Items IV-D-164, IV-D-346, and IV-G-3.

contribute to greater than a 7 percent improvement in the seasonal average visibility below the rim of the canyon. However, EPA did not quantify the expected visibility improvement below the rim of the canyon due to the limited amount of data and understanding of the air transport mechanisms below the rim of the canyon.

F. Schedule of Compliance

As noted above, compliance with the emission limitation will be phased-in by unit on the following schedule:

- One unit by November 19, 1997
- Two units by November 19, 1998
- All units by August 19, 1999.

The phasing in of the emission limitation will allow NGS to initiate operation of the control systems one at a time.

To ensure that NGS complies with the emission limitation by the dates specified, EPA has established a schedule of compliance containing interim deadlines as follow:

Date of binding contract for Architectural/Engineering firm to design and procure the control system needed for compliance.	6/92
Start of on-site construction of the control system for the first unit.	1/95
Initiation of start-up testing	
first unit	5/97
second unit	5/98

third unit

2/99

The Administrator may extend the interim deadlines if NGS can demonstrate that compliance with the final deadlines for compliance, stated above, will not be affected.

G. Maintenance Schedule

The final regulation provides that by March 16, 1993, and every March 16th thereafter, the NGS owner or operator will prepare a long-term maintenance plan for NGS that maximizes winter down-time while accommodating the maintenance requirements for the other generating facilities on the NGS grid. The plan will cover the period from March 16 to March 15 of the next year and must provide at least a full six unit-weeks of maintenance for NGS in the November 1 to March 15 period, except as provided below, to further reduce SO₂ emissions during the winter. The plan will be developed consistent with the criteria established by the Western States Coordinating Council of the North American Electric Reliability Council to ensure adequate reserve margin. The full six unit-weeks of winter maintenance need not occur if any of the following circumstances arise:

1. There is no need for six unit-weeks of scheduled periodic maintenance in the March 16 - March 15 year covered by the plan.
2. The reserve margin on any electrical system served by NGS would fall to an inadequate level, as defined by the criteria referenced above. In such case, the scheduled

maintenance may be moved out of the November 1 to March 15 period.

3. The cost of compliance with this provision would be excessive. Costs of compliance would be considered excessive when the economic savings to the participants of moving NGS' maintenance out of the November 1 to March 15 period exceeds \$50,000 per unit-day of maintenance moved.

4. A major forced outage at a unit occurs outside the winter months, and necessary periodic maintenance occurs during the period of forced outage.

The NGS owner or operator must demonstrate to the satisfaction of the Administrator that one or more of the events listed above render unnecessary or unreasonable a full six-unit weeks of scheduled maintenance during the specified winter period. Where six unit-weeks of scheduled maintenance is unnecessary or unreasonable, the NGS owner or operator must nevertheless make best efforts to conduct as much scheduled maintenance as practicable during the winter period.

When maintenance is being conducted on a unit, the unit will not be in operation and therefore not emitting SO₂. Thus, the shifting of NGS maintenance to the wintertime period will further reduce NGS SO₂ emissions during the period when NGS is suspected to have its greatest impact on the GCNP. Further, because the scheduled winter maintenance requirement will be implemented in the winter of 1993-1994

it will have the effect of making a degree of reasonable progress toward the national visibility goal before final compliance with the emission limitation is required. Because NGS must, for normal operation, conduct this maintenance, rescheduling it in the wintertime period should have little economic impact on NGS.

H. Air Quality Review

The installation and operation of a wet FGD control system at NGS (the proven available technology EPA that anticipates will be used) will lower the exhaust gas temperature from the stacks and could reduce the plume rise above the NGS stacks. The EPA and the Arizona Department of Environmental Quality reviewed the need to reheat the exhaust gases to ensure appropriate plume rise with the lower gas exit temperatures associated with meeting a 0.10 lbs/MMBtu emission limitation using wet FGD and found that reheating of the exhaust gas will not be necessary to prevent a violation of any national ambient air quality standard. If the exhaust gas is not reheated the control cost will be reduced significantly.

If NGS were to select a wet FGD SO₂ control system, the water content of the plume would increase. Under certain conditions, a white steam plume will occur as the water vapors condenses before it dissipates. This steam plume may be visible near the stack, however, it will not cause any visibility impairment in GCNP or surrounding mandatory Class

I Federal areas and will not interfere with the attainment of any national ambient air quality standards. Such steam plumes are not subject to any State or Federal visual emission standards or regulations.

RESPONSE TO COMMENTS

The September 5, 1989, February 8, 1991, and August 13, 1991 notices requested comment on a variety of issues relating to attribution of impairment, cost of controls, and the benefit expected from the controls. In addition, EPA held a public hearing on March 18 and 19, 1991 during which EPA received comments on its February 1991 proposal.

Under section 307(d) of the Act, today's action must be accompanied by a response to each of the significant comments, criticisms, and new data submitted in written or oral presentations during the comment period. The EPA has carried out this duty. Moreover, modifications to the proposed rule have been made in response to public comments. The EPA's final control strategy for NGS largely embodies public comments received from representatives of GCT, EDF and SRP which, in turn, were subject to public comment²⁷

²⁷ The agreement among the NGS owners, GCT and EDF to support the rulemaking alternative that, in material part, is adopted today has the effect of mooted earlier comments by these parties that disagreed in various respects with EPA's February 1991 proposed rule and the studies underlying it. Accordingly, at this juncture EPA has no obligation to respond to previous comments from these parties that are inconsistent with their subsequent MOU and associated regulatory recommendations to EPA, which embody the parties' current position on this rulemaking.

[see, e.g., 56 FR 38399 (August 13, 1991)]. Further, in its February 1991 proposal EPA requested comment on several control options including but not limited to the following rule elements and specific regulatory alternatives: (1) emission limitations, including limitations ranging between 0.50 and 0.10 lbs/MMBtu, (2) averaging times, including a 3-hour, 30-day, and annual averaging period, and (3) implementation schedules, including one providing for plant-wide compliance by the year 2000. As noted below, EPA received many comments in response to the February 1991 proposal supporting, in part, the control elements adopted by EPA, in total, today. For example, many citizens and representatives of environmental organizations commented supporting a 0.10 lbs/MMBtu emission limitation, that emission limitation adopted today. Many representatives of industry and business submitted comments supporting an annual averaging period and a long compliance schedule.

During the initial public comment period EPA received over 400 comments, including the public hearing transcript. A summary of the significant comments, criticisms, and new data submitted in written or verbal presentations during the public comment period, and EPA's responses are provided below. Documents containing a more thorough listing of the

comments, along with EPA's responses, have been placed in Docket A-89-02A.^{28, 29}

During the supplemental comment period EPA received 13 additional comments. One commenter objected to requiring any additional pollution controls on NGS based on the information provided in the NGSVS. The other 12 commenters supported the adoption of a control strategy consistent with the MOU. One commenter of these expressed a concern about the exemptions from the winter scheduling of maintenance and a desire that the schedule for the installation and operation of controls be expedited.

The SRP, GCT, EDF, The Wilderness Society, National Wildlife Federation, and Sierra Club, have conditionally withdrawn prior comments that are inconsistent with the August MOU entered by representatives of SRP, GCT and EDF and associated recommendations to the Agency. In light of this withdrawal, some of the comments discussed here and in the supplementary response to comments documents placed in the rulemaking docket are no longer pending before the Agency and, clearly, no longer "significant" within the meaning of section 307(d) of the Act. The EPA has discussed

²⁸JCM Environmental, "Summary of Public Comments, Proposed Revision to Arizona Visibility FIP for Navajo Generating Station" July 1991.

²⁹ See "Response to Public Comments, Proposed Revisions to Arizona Visibility FIP," U.S. EPA, September 1991.

them in order to help the public better understand today's action.

A. Attribution and Source Impairment Relationship

The EPA received a large number of comments on its attribution of a portion of the visibility impairment in the GCNP to NGS. These comments expressed a variety of opinions including statements that EPA had already made an attribution decision and that EPA should not revisit that decision, that more than adequate information was available to make such a decision and that it is clear from the record that a portion of the visibility impairment in GCNP is attributable to NGS, that EPA should not make a decision to attribute the impairment to NGS until it developed a strong source-impairment relationship, and that EPA should not attribute the impairment to NGS since it is not the sole cause of the impairment in the GCNP. In its February 1991 proposal, EPA reopened its comment period on and explicitly requested public comment on its preliminary attribution decision. Therefore, EPA's proposed attribution decision was subject to public comment. As explained earlier, EPA has reviewed the available technical data and analyses and has concluded that a portion of the visibility impairment in GCNP is reasonably attributable to NGS. Once EPA attributed a portion of the impairment to NGS, it then had to develop a source impairment relationship in order to estimate the expected improvements in visibility resulting from the

installation of the controls. The EPA has balanced the available information to establish a reasonable source impairment relationship for effects at Hopi Point. As explained earlier, NGS does not have to be the sole contributor to the impairment in order for EPA to take action under section 169A or the 1980 visibility regulations implementing section 169A.

B. Emission Limitation

Individuals and groups that commented on the emission limitation generally requested that EPA adopt a requirement for the maximum level of control or no controls at all. No commenters supported the 50 percent control level. Some commenters supported an SRP proposal, now withdrawn, which called for a 70 percent level. Most commenters on the emission limitation supported a 90 or 95 percent control level. The commenters that did not support controls did so because of the cost of the controls and/or the alleged lack of a strong demonstrated source-impairment relationship. As discussed earlier, EPA believes that an adequate source impairment relationship does exist for EPA to require NGS to control its emissions. The control strategy that EPA is promulgating today will provide a 90 percent reduction in the SO₂ emissions from NGS at a cost below that which would have been necessary to meet the control strategy EPA proposed in February 1991. Thus, the control strategy adopted by EPA satisfies both groups of commenters in that

it will result in a greater emission reduction at a lower cost. Further, as noted previously, EPA must balance a number of factors in taking action today under section 169A. Such action must be balanced in light of EPA's statutory mandate set out in section 169A to make "reasonable progress" toward the national goal of "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution." EPA carefully has weighed, for example, the estimated cost of compliance with today's emission limitation and the visibility benefits expected to be realized and concluded that today's control strategy, taken together, is a reasonable exercise of its delegated rulemaking authority under section 169A.

C. Averaging Time

Several commenters supported a short (3 hour) averaging time stating that it would ensure that maximum visibility protection. Some of these comments have been withdrawn. Other commenters supported a longer (30 days to annual) averaging time stating that it would eliminate the need for expensive backup control equipment. The EPA adoption of the control strategy which includes an annual rolling average emission limitation will eliminate the need for the backup equipment. However, the control strategy also includes a

stringent emission limitation and winter maintenance scheduling to ensure maximum visibility protection.

D. Compliance Schedule

Several commenters noted that section 169A of the Act requires that BART emission limitations be met within 5 years. Some of the commenters have since withdraw these comments. Others commented that it was legally permissible for compliance with a BART emission limitation to extend beyond 5 years. In EPA's August 1991 notice reopening the comment period, EPA also published a memorandum from its Office of General Counsel that described the legal basis for the 1997, 1998, and 1999 compliance schedule adopted today. In essence, as discussed in the August 1991 notice, EPA is relying principally on the reasonable progress requirements of section 169A(b)(2). The requirements of that section, which encompasses both the long-term strategy and BART provisions, are met by today's action.

E. BART Guidelines

In the February 1991 proposal (56 FR 5178 col. 1) EPA requested comments on two potential revisions to the BART Guidelines. First, EPA requested comment on the continued use of the New Source Performance Standards as a base for the BART analysis. Second, EPA requested comment on whether it should include the consideration of the value of marketable allowances when estimating the cost of control systems. The EPA received several comments on both issues.

However, in making its final determination on today's action neither of these issue were significant. Therefore, EPA is not making a final decision on whether to revise the BART Guideline at this time.

G. Cost of Controls

Several commenters alleged that EPA may have overestimated the economic impact of the controls. They also noted that costs are quite small when divided up among the various consumers. Other commenters alleged that the increase cost will have a significant impact on the consumers. The EPA has recalculated the cost of the controls of today's final action based upon the new information provided by SRP. Those numbers may be overestimates of the actual cost of control. Even if the actual controls costs are consistent with SRP and EPA estimates, as noted, EPA has concluded that today's action achieves greater visibility benefit at less cost than EPA's February 1991 proposed option and, moreover, balancing the estimated costs, expected visibility improvement and other relevant factors EPA has concluded that the expected improvements in the visibility in the GCNP justify the estimated costs.

Several commenters noted that the recipients of Central Arizona Project (CAP) water face a greater price increase than electricity customers or will otherwise bear a significant economic hardship as a result of the control costs of today's action. As discussed in the Regulatory Flexibility Act (RFA) section below, EPA cannot estimate every potential indirect cost of today's action. Nevertheless, EPA carefully has considered the potential

impacts of today's action on recipients of CAP water, including farmers receiving such water. The Central Arizona Water Conservation District submitted an estimate of a 7 percent to 10 percent increase in agricultural water rates, resulting in an increased water cost of nearly \$10,000 per year for a typical family farmer. The EPA estimates such an increase would be less than a 2 percent increase in the total variable costs of a typical farm. At the present time agricultural water in Arizona receives a substantial Federal subsidy. Current Federal policy calls for phasing out the water subsidy. When the subsidy is eliminated, the impact of the increased cost at NGS will be an even smaller percentage of both total variable cost and total water cost. As discussed elsewhere, EPA has weighed and balanced the costs of today's action, the expected visibility improvement, and other requisite considerations and concluded that today's control strategy, taken together, constitutes a reasonable exercise of EPA's delegated rulemaking authority under section 169A of the Act. In addition, a steam plume is not regulated under either State or Federal air pollution regulations.

H. Impacts on Other Class I Areas

Several commenters noted the impact of NGS on the other Class I areas in the region known as the "Golden Circle." Two of the commenters provided photographs and modeling to support their statements. The EPA agrees that NGS could

contribute to the visibility impairment in those other areas, but, the data and modeling that was presented was not adequate for EPA to use in making a definitive determination on attribution of the impairment in those areas to NGS. However, the controls that are being required today will significantly reduce if not eliminate NGS contribution to the visibility impairment in those areas.

I. Seasonal Controls

In the February 1991 proposal EPA requested comment on whether, as a policy matter, it should allow seasonal controls at NGS and whether, if technically justified, seasonal controls would be legally permissible. Several commenters recommended that EPA adopt a control strategy for NGS that included seasonal controls and/or commented that seasonal controls could lawfully constitute an emission limitation representing BART under section 169A. The principal comments supporting seasonal controls were submitted by SRP and have been withdrawn. Several others commented that the technical record did not support seasonal controls and/or commented that as a legal matter seasonal controls could not constitute an emission limitation under section 169A. During the comment period the GCT and its consultants presented analyses demonstrating that NGS's emissions may significantly impair visibility year-round at the GCNP as well as other class I areas in the region. Although the analyses were based on limited modeling, they

demonstrated, for example, that NGS emissions could impair visibility in surrounding class I areas between 60 and 80 percent of the time year-round. In light of NGS's impacts on GCNP in seasons other than winter, its potential year-round impacts on surrounding class I areas and other policy benefits associated with year-round controls, EPA has concluded that seasonal controls would not be appropriate in this case. Therefore, EPA need not determine whether such controls would be legally permissible.

EDF v. Reilly

Today's action regarding NGS completes EPA's obligations under the settlement agreement in EDF v. Reilly, No. C82-6850 (N.D. Cal.), and under the first round of SIP/FIP planning called for in the visibility regulations.

NONPRECEDENTIAL EFFECT OF THIS ACTION

Today's promulgation is limited to the rulemaking requiring an SO₂ emission limitation for NGS in order to remedy visibility impairment in the GCNP that is reasonably attributable to NGS. As such, it has no direct precedential effect on any other rulemaking action EPA might undertake in the future regarding other existing sources or Class I areas. This is so because the outcome of this rulemaking has been highly dependent upon facts and circumstances that are unique to this proceeding and thus may not be decisive for other cases. For example, the tracer studies and other analyses contained in the WHITEX and NGSVS reports that are

key to a showing that impairment at GCNP is reasonably attributable to NGS are not necessarily determinative in any other rulemaking addressing other potential sources of visibility impairment. Should EPA or State agencies conduct visibility rulemakings regarding other Class I areas and other existing sources of pollution in the future, they will need to rely on attribution techniques appropriate for those other areas and sources in order to make reasoned regulatory decisions. They will not be able to rely solely on WHITEX or NGSVS findings that specifically address the GCNP and NGS to determine the existence of impairment that is reasonably attributable to any such other source. Likewise, neither the methodology used for establishing the expected improvement in visibility that could be anticipated to result from use of alternative SO₂ control systems nor the final emission limit being promulgating today will not have direct precedential effect elsewhere. The statutory requirement that EPA weigh various factors before reaching a decision is by nature a case-specific process.

Classification

Executive Order No. 12291 requires each Federal agency to determine if a regulation is a "major" rule as defined by the order and "to the extent permitted by law," to prepare and consider an RIA in connection with every major rule. Major rules are defined as those likely to result in:

1. an annual effect on the economy of \$100 million or more; or
2. a major increase in costs or prices for consumers or individual industries; Federal, State, or local government agencies; or geographic region; or
3. significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The EPA judged the February 1991 proposed regulation for NGS to be a major rule based on projected annualized costs potentially in excess of \$100 million. The EPA then prepared a preliminary RIA that included estimates of costs, benefits, and net benefits for three control options. The preliminary analysis, titled "Regulatory Impact Analysis of a Revision of the Federal Implementation Plan for the State of Arizona to Include SO₂ Controls for the Navajo Generating Station," and an addendum, titled "Addendum to the Regulatory Impact Analysis of a Revision of the Federal Implementation Plan for the State of Arizona to Include SO₂ Controls for the Navajo Generating Station" are available in Docket A-89-02A.

In light of the reduced estimated cost of this rule, the Office of Management and Budget (OMB) has exempted this

action from the RIA requirements. Therefore, EPA did not finalize the preliminary RIA.

Paperwork Reduction Act

This rule will impose a modest reporting burden on the participants of the NGS to enable EPA to ensure compliance with the emission limits. Because the reporting burden affects only a single source, it is not subject to OMB review under the Paperwork Reduction Act.

Section 317(c) Economic Impact Assessment

This action is taken pursuant to sections 169A and 110(c) of the Act, and a section 317(c) economic impact assessment may not be required. However, all of the analytical requirements of section 317(c) have been met. The section 317(c)(1) analysis of alternative regulations, and the impact of varying the effective date, are essential considerations in promulgating this revision to the FIP for Arizona. Each of the section 317(c) requirements are included in the BART analysis prepared by EPA. Portions of the economic impact assessment are revised in this notice based on additional information and comments provided to EPA.

Regulatory Flexibility Act

Under the RFA, 5 U.S.C. §§601-612, EPA must prepare initial and final regulatory flexibility analyses describing the impact on small entities, which include small businesses, small not-for-profit enterprises, and

governmental entities with jurisdiction over populations of less than 50,000. The requirement of preparing such an analysis is waived, however, if the Administrator certifies that the rule will not have a significant economic impact on a substantial number of small entities [see 5 U.S.C. §605(b)].

In the February 1991 proposal, the Administrator certified that the proposed rule would not have a significant impact on a substantial number of small entities because none of the participants of NGS are classified as small according to the guidelines developed by the Small Business Administration. Moreover, EPA estimated that for all of the electric utilities using NGS power, the impact on electric utility rates would be substantially less than 5 percent.

Similarly, the emission limitation being established today does not have a direct impact on and will not apply to a substantial number of small entities because none of the participants of NGS subject to today's action are classified as small according to the guidelines developed by the Small Business Administration. Further, during the comment period on the February 1991 proposal and the August 1991 supplemental notice, SRP, NPC and the Central Arizona Water Conservation District (CAWCD) submitted comments indicating that the potential indirect costs that may be passed on to

customers of the NGS participants were less than those estimated by EPA.

The comments on potential indirect costs incurred by rate payers submitted by SRP, NPC, CAWCD, and others do not address the costs incurred directly by the NGS participants, the entities that are subject to and directly impacted by today's action and that do not qualify as "small." Further, except for the general comments submitted by the Bureau of Reclamation, the comments do not address EPA's conclusion under the RFA that the proposed rule would not have a significant economic impact on a substantial number of small entities. Before discussing the comments, EPA notes that it cannot and is not legally required to foresee all of the indirect impacts associated with today's action. The EPA cannot anticipate how the NGS participants will seek to pay for the costs associated with today's action, the decisions that public utility commission will confront and make, etc. Nevertheless, EPA has considered and attempted to respond to those comments addressing indirect costs impacting potential small entities in order to explain more fully for the public the Administrator's finding under the RFA that today's final rule will not have a significant impact on a substantial number of small entities.

In the draft RIA, EPA estimated a \$92 million per year control cost would increase SRP's and NPC's electric rates

by a maximum of 3.1 percent and 4.4 percent, respectively.³⁰ The EPA estimated that of the six utilities receiving power from NGS, these two would experience the greatest electric rate increases if power generation costs were passed through completely to consumers because both SRP and NPC rely on 25 percent of Navajo electricity for their total sales and each has a low average cost/kWh relative to the other four participants. Further, EPA estimated that these percentage estimates likely were overestimates due to various dampening effects omitted from the calculation.

The NPC submitted comments on EPA's February 1991 proposal in which it estimated that the control costs would result in a 2.27 percent increase for its residential customers. The SRP also submitted comments on the February 1991 proposal in which it estimated that a control strategy costing \$90 million would result in a 2.1 percent to 2.5 percent increase to its rate payers. These estimated increases are less than the 5 percent impact estimated in EPA's February 1991 proposal. Further, these costs may be overestimated in that, for example, today's control option is cheaper than that advanced in the February 1991 proposal. In addition, the sale of SO₂ allowances under the SO₂

³⁰ See generally Draft Regulatory Impact Analysis of a Revision of the Federal Implementation Plan for the State of Arizona to Include SO₂ Controls for the Navajo Generating Station.

allowance trading program established by EPA under Title IV of the Act may mitigate costs.

In the draft RIA for the February 1991 proposal, EPA also estimated the economic impact on CAP water users. The EPA estimated an 18 increase in water costs for farmers receiving agricultural water from the CAP. This estimate translated into a \$11/acre-foot increase (3 cents per 1000 gallons of water), raising total annual variable costs for a 800-900 acre farm (the size of the average farm served by CAP) by 3-4 percent per year (\$22,000/year). The EPA further explained why these costs were anticipated to be overestimates and how the costs compared with unsubsidized non-CAP water.

At the public hearing on the February 1991 proposal, a member of the Board of Directors of the CAWCD testified that their analysis concluded the NGS control costs would result in a \$4.50 per acre-foot increase in CAP water, less than EPA's \$11 estimate. The CAWCD further testified that the \$4.50/acre-foot would translate into an annual cost increase of \$7200 for the average farmer irrigating 800 acres. In comments dated September 6, 1991, addressing the proposal identified in EPA's August 1991 supplemental notice, CAWCD generally commented that the control costs will add 7 percent to 10 percent to the annual costs of its water delivery and, in turn, additional costs of nearly \$10,000 per year for CAP water for a typical farmer, costs of

approximately \$3 million annually on all of its municipal water suppliers taken together, and a \$1.5 million annual increase on Indian Tribes.

As evident, the CAWCD cost figures are inconsistent in that testimony at the public hearing and the written text accompanying that testimony estimated an annual impact of \$7200 on the average farmer and comments dated September 6, 1991 estimated that costs would be "nearly \$10,000 per year." The inconsistency is further perplexing in that the option advanced in the August 1991 notice was less expensive than that identified in the February 1991 proposal. Because CAWCD's comments on costs are general and undocumented, EPA cannot check their derivation. In any case, both cost figures are less than half of that identified in EPA's draft RIA. The EPA estimates that the \$7200 and \$10,000 cost figures submitted by CAWCD would translate into a 1 percent to 2 percent increase in total variable costs for the average farmer. The EPA has no reason to believe that the percentage increase in costs of water for municipal suppliers or Indian Tribes will be substantially different from the economic impact on farmers purchasing CAP water. Further, as noted above, the owner of NGS may substantially mitigate the costs of today's action by selling SO₂ allowances. This, in turn, should curb any indirect costs incurred.

Finally, in commenting on EPA's February 1991 proposal, the Bureau of Reclamation (the Bureau) generally commented on EPA's conclusion that an initial RFA was unnecessary by noting that testimony at the public hearing provided evidence of adverse impacts on small businesses, farmers, governmental entities and Indian Tribes. In its only example of cost impacts, the Bureau commented that the agricultural customers of the CAWCD could experience increases in their water rates of approximately \$10 per acre-foot which, they commented, would result in a 16 percent increase in annual costs for CAWCD's large customers.

The Bureau's comments that agricultural customers of CAWCD could experience increases in water rates of approximately \$10 per acre-foot are inconsistent with CAWCD's own comments which suggested an impact of approximately \$4.50 per acre-foot and, further, were not substantiated. In addition, the Bureau's \$10 per acre-foot estimate is lower than EPA's more conservative estimate. DOI's comments also were based on the February 1991 option which, as noted, is more costly than today's final action. Based on the CAWCD comments, EPA estimates that today's action will result in less than a 2 percent increase in the total variable costs for the average CAWCD farmer.

As noted, EPA has estimated the cost impacts on the residential customers of SRP and NPC. Residential customers

are usually the category of consumers bearing the greatest impact in cost increases because most utility rate structures typically charge incrementally less for the more power that is consumed. Further, as noted, EPA expects the impacts on the residential customers of NPC to be higher than any other customers of the NGS participants. Thus, EPA's estimate of the impact on NPC residential customers serves as a worst-case check on the potential electricity rate impacts on other potential customers. The impact on all potential small entities, including school districts, local governments, business establishments, not-for-profit enterprises, etc., should be similar or smaller. Thus, not only were the Bureau's general claims about potential impacts on small entities undocumented, EPA believes it's consideration of the impacts on residential rate payers affords a reasonable check of the potential impacts on other NGS electricity customers.

Accordingly, for all of the reasons stated, I hereby certify that the regulation being promulgated today will not have a significant economic impact on a substantial number of small entities.

List of Subjects in 40 CFR Part 52

Air pollution control, Nitrogen dioxide, Particulate matter, Carbon monoxide, Ozone, Lead, Sulfur oxides, Reporting and recordkeeping requirements.

Date

Administrator

1. The authority for Part 52 continues to read as follows: Authority: 42 U.S.C. 7401-7642.

2. Section 52.145 is amended by adding paragraph (d) to read as follows:

Section 52.145 Visibility Protection

* * * * *

"(d) This paragraph is applicable to the fossil fuel-fired, steam-generating equipment designated as Units 1, 2, and 3 at the Navajo Generating Station in the Northern Arizona Intrastate Air Quality Control Region (§81.270 of this chapter).

(1) Definitions

"Affected Unit(s)" means the steam generating unit(s) at the Navajo Generating Station, all of which are subject to the emission limitation in paragraph (d)(2) below, that has accumulated at least 365 boiler operating days since the passage of the date defined in paragraph (d)(6) below applicable to it.

"Administrator" means the Administrator of EPA or his/her designee.

"Boiler Operating Day" for each of the boiler units at the Navajo Generating Station is as defined as a 24-hour calendar day (the period of time between 12:01 AM and 12:00 midnight in Page, Arizona) during which coal is combusted in that unit for the entire 24 hours.

"Owner or Operator" means the owner, participant in, or operator of the Navajo Generating Station to which this paragraph is applicable.

"Unit-Week of Maintenance" means a period of 7 days during which a fossil fuel-fired steam generating unit is under repair and no coal is combusted in the unit.

(2) Emission Limitation. No owner or operator shall discharge or cause the discharge of sulfur oxides into the atmosphere in excess of 42 ng/J [0.10 pounds per million British thermal units (lbs/MMBtu)] heat input.

(3) Compliance Determination. Until at least one unit qualifies as an affected unit no compliance determination is appropriate. As each unit qualifies for treatment as an affected unit it shall be included in the compliance determination. Compliance with this emission limit shall be determined daily on a plant-wide rolling annual basis as follows:

(i) For each boiler operating day at each steam generating unit subject to the emission limitation in paragraph (d)(2) above, the owner or operator shall record the unit's hourly SO₂ emissions using the data from the continuous emission monitoring systems, (required in paragraph (d)(4) below) and the daily electric energy generated by the unit (in megawatt-hours) as measured by the megawatt-hour meter for the unit.

(ii) Compute the average daily SO₂ emission rate in ng/J (lbs/MMBtu) following the procedures set out in method 19, Appendix A, 40 CFR Part 60 in effect on [date of publication].

(iii) For each boiler operating day for each affected unit calculate the product of the daily SO₂ emission rate (computed according to ii above) and the daily electric energy generated (recorded according to i above) for each unit.

(iv) For each affected unit identify the previous 365 boiler operating days to be used in the compliance determination. Except as provided in paragraphs (d)(9) and (d)(10) below, all of the immediately preceding 365 boiler operating days will be used for compliance determinations.

(v) Sum, for all affected units, the products of the daily SO₂ emission rate-electric energy generated (as calculated according to ii above) for the boiler operating days identified in iii above.

(vi) Sum, for all affected units, the daily electric energy generated (recorded according to i above) for the boiler operating days identified in iii above.

(vii) Calculate the weighted plant-wide annual average SO₂ emission rate by dividing the sum of the products determined according to iv above by the sum of the electric energy generated determined according to v above.

(viii) The weighted plant-wide annual average SO₂ emission rate shall be used to determine compliance with the emission limitation in paragraph (d)(2) above.

(4) Continuous Emission Monitoring. The owner or operator shall install, maintain, and operate continuous emission monitoring systems to determine compliance with the emission limitation in paragraph (d)(2) as calculated in paragraph (d)(3) above. This equipment shall meet the specifications in Appendix B of 40 CFR Part 60 in effect on [date of publication]. The owner or operator shall comply with the quality assurance procedures for continuous emission monitoring systems found in Appendix F of 40 CFR Part 60 in effect on [date of publication].

(5) Reporting Requirements. For each steam generating unit subject to the emission limitation in paragraph (d)(2) above, the owner or operator:

(i) shall furnish the Administrator written notification of the SO₂, oxygen and carbon dioxide emissions according to the procedures found in 40 CFR §60.7 in effect on [date of publication].

(ii) shall furnish the Administrator written notification of the daily electric energy generated in megawatt-hours.

(iii) shall maintain records according to the procedures in 40 CFR §60.7 in effect on [date of publication].

(iv) shall notify the Administrator by telephone or in writing within one business day of any outage of the control system needed for compliance with the emission limitation in paragraph (d)(2) above and shall submit a follow-up written report within 30 days of the repairs stating how the repairs were accomplished and justifying the amount of time taken for the repairs.

(6) Compliance Dates. The requirements of this paragraph shall be applicable to one unit at the Navajo Generating Station beginning November 19, 1997, to two units beginning November 19, 1998, and to all units beginning on August 19, 1999.

(7) Schedule of Compliance. The owner or operator shall take the following actions by the dates specified:

(i) By June 1, 1992, award binding contracts to an architectural and engineering firm to design and procure the control system needed for compliance with the emission limitation in paragraph (D)(2) above.

(ii) By January 1, 1995, initiate on-site construction or installation of control system for the first unit.

(iii) By May 1, 1997 initiate start-up testing of the control system for the first unit.

(iv) By May 1, 1998 initiate start-up testing of the control system for the second unit.

(v) By February 1, 1999 initiate start-up testing of the control system for the third unit.

The interim deadlines will be extended if the participants or operators can demonstrate to the Administrator that compliance with the deadlines in paragraph (D)(6) above will not be affected.

(8) Reporting on Compliance Schedule. Within 30 days after the specified date for each deadline in the schedule of compliance (paragraph (D)(7) above), the owner or operator shall in writing notify the Administrator whether the deadline was met. If it was not met the notice shall include an explanation why it was not met and the steps which shall be taken to ensure future deadlines will be met.

(9) Exclusion for Equipment Failure during Initial Operation. For each unit, in determining compliance for the first year that such unit is required to meet the emission limitation in paragraph (D)(2) above, periods during which one of the following conditions are met shall be excluded:

(i) Equipment or systems do not meet designer's or manufacturer's performance expectations.

(ii) Field installation including engineering or construction precludes equipment or systems from performing as designed.

The periods to be excluded shall be determined by the Administrator based on the periodic reports of compliance with the emission limitation in paragraph (d)(2) above which shall identify the times proposed for exclusion and provide the reasons for the exclusion, including the reasons for the

control system outage. The report also shall describe the actions taken to avoid the outage, to minimize its duration, and to reduce SO₂ emissions at the plant to the extent practicable while the control system was not fully operational. Whenever the time to be excluded exceeds a cumulative total of 30 days for any control system for any affected unit, the owner or operators shall submit a report within 15 days addressing the history of and prognosis for the performance of the control system.

(10) Exclusion for Catastrophic Failure. In addition to the exclusion of periods allowed in paragraph (d)(9) above, any periods of emissions from an affected unit for which the Administrator finds that the control equipment or system for such unit is out of service because of catastrophic failure of the control system which occurred for reasons beyond the control of the owner or operators and could not have been prevented by good engineering practices will be excluded from the compliance determination. Events which are the consequence of lack of appropriate maintenance or of intentional or negligent conduct or omissions of the owner or operators or the control system design, construction, or operating contractors do not constitute catastrophic failure.

(11) Equipment Operation. The owner or operator shall optimally operate all equipment or systems needed to comply with the requirements of this paragraph consistent with good

engineering practices to keep emissions at or below the emission limitation in paragraph (d)(2) above; and following outages of any control equipment or systems the control equipment or system will be returned to full operation as expeditiously as practicable.

(12) Maintenance Scheduling. On March 16 each year starting in 1993, the owner or operator shall prepare and submit to the Administrator a long-term maintenance plan for the Navajo Generating Station, which accommodates the maintenance requirements for the other generating facilities on the Navajo Generating Station grid, covering the period from March 16 to March 15 of the next year and showing at least 6 unit-weeks of maintenance for the Navajo Generating Station during the November 1 to March 15 period, except as provided in paragraph (d)(13) below. This plan shall be developed consistent with the criteria established by the Western States Coordinating Council of the North American Electric Reliability Council to ensure an adequate reserve margin of electric generating capacity. At the time that a plan is transmitted to the Administrator, the owner or operator shall notify, in writing, the Administrator if less than the full scheduled unit-weeks of maintenance were conducted for the period covered by the previous plan and shall furnish a written reporting stating how that year qualified for one of the exceptions identified in paragraph (d)(13) below.

(13) Exceptions for Maintenance Scheduling. The owner or operator shall conduct a full 6 unit-weeks of maintenance in accordance with the plan required in paragraph (d)(12) above unless the owner or operator can demonstrate to the satisfaction of the Administrator that a full 6 unit-weeks of maintenance during the November 1 to March 15 period should not be required because of the following:

(i) There is no need for 6 unit-weeks of scheduled periodic maintenance in the year covered by the plan;

(ii) The reserve margin on any electrical system served by the Navajo Generating Station would fall to an inadequate level, as defined by the criteria referred to in paragraph (d)(12) above;

(iii) The cost of compliance with this requirement would be excessive. The cost of compliance would be excessive when the economic savings to the owner or operator of moving maintenance out of the November 1 to March 15 period exceeds \$50,000 per unit-day of maintenance moved; or

(vi) A major forced outage at a unit occurs outside of the November 1 to March 15 period, and necessary periodic maintenance occurs during the period of forced outage.

If the Administrator determines that a full 6 unit-weeks of maintenance during the November 1 to March 15 period should not be required, the owner or operator shall nevertheless conduct that amount of scheduled maintenance that is not precluded by the Administrator. Generally, the

owner or operator shall make best efforts to conduct as much scheduled maintenance as practicable during the November 1 to March 15 period.

WILLIAMS NEWS Williams, Arizona Thursday, January 17, 1991

Cloud Inversion Traps Haze At Grand Canyon National Park

Last week, Grand Canyon National Park experienced a five-day stretch of haze and poor visibility at viewpoints along the South Rim. According to Superintendent Jack Davis, the winds from the northeast caused conditions similar to those found during previous park service visibility studies.

Although it cannot be proven conclusively, there is a high probability the visibility impairment is a result of Sulfur Dioxide emissions from the Navajo Generating Station, located upstream of South Rim along the Colorado River.

As a result of previous visibility studies conducted by the National Park Service (NPS) at Grand Canyon, the Environmental Protection Agency (EPA) arrived at two facts: 1) A finding of attribution impacting air quality; and 2) Proposed a recommendation that

operators be required to clean up 90% of emissions.

An EPA final decision is expected February 1, 1991.

"We have approached the situation by using existing air quality acts and followed the processes of the law," stated Superintendent Davis.

He added, "The EPA needs to take action."

Davis went on to say that once the EPA makes a final ruling, the Navajo Generating Station, operated by the Salt River Project, has time to respond. The cost to clean-up emissions is "very expensive."

"Poor visibility generally occurs in the winter. It comes down from Page with common northeasterly winds, funnels down the Colorado River, and an inversion or high humidity traps it in there -- then you get the haze," explained the su-

perintendent.

He added, "The Grand Canyon is here to be seen and seen clearly."

"In the winter, we find the clearest and yet some of the worst days," Davis stated.

He explained that the National Park Service utilizes instrumentation that measures visibility and impairment. Air filters pick up contents found in the air over Grand Canyon, and the attribution studies told where the emissions were coming from. Although they are keeping track of air quality, they are no longer performing attribution studies.

The Superintendent believes Grand Canyon National Park picks up pollution from the general Southwest area, like southern Arizona, Los Angeles, and the

(Continued Page 2B)

Cloud Inversion Holds In Haze

(From Page 1B)

Mojave Generating Station. Southerly winds also bring some pollution from the Las Vegas area, where there is a conglomeration of traffic and industrial plants. He said that it is very probable additional air quality studies will be initiated by the park service in the very near future.

When an inversion, where clouds are trapped inside the canyon's inner gorge, moisture, or fog conditions prevail at the South Rim, air quality is impaired until another weather front moves in and cleans it out.

By Sunday, January 13, visibility at the South Rim had improved dramatically.

The pall over Grand Canyon

IT DOESN'T happen often, but the air at Grand Canyon sometimes gets so polluted — as it did one day earlier this month — that visitors can't see from one rim to the other.

The main source of this appalling man-made haze is the Navajo power plant, a huge coal-fired generator built in the early 1970s just upstream from the head of the canyon near Page, Ariz.

Each year, the plant's smokestacks send about 70,000 tons of sulfur dioxide into the skies over the Colorado Plateau. That's about 10 times as much as a new facility of similar size would be allowed to emit under current standards.

The National Park Service and the Environmental Protection Agency want to force the plant to cut its emissions by 90 percent, a move that would perceptibly improve visibility in the canyon — especially on the 20 to 30 days each winter when it's most degraded.

But the White House is reportedly objecting to the cost, which would amount to more than \$60 million a year over the next 30 years — assuming the plant's owners could recoup some of the expense by selling "pollution rights" to other utilities, as permitted under the new Clean Air Act.

In addition, the operator — the Phoenix-based Salt River Project — points out that at the height of the tourist season in summer, its

emissions have less of an impact on air quality in the canyon than smog drifting in from Los Angeles. Moreover, the consortium says the wind blows the pollution from the plant toward the canyon only 30 percent of the time anyway.

This may be true. But the rest of the time, the wind may be blowing toward other national parks nearby, notably Canyonlands, Capitol Reef, Zion and Bryce Canyon. And unlike the people who run the power plant, the residents of the L.A. Basin have committed themselves to an anti-pollution agenda that will reduce their emissions of such gases by roughly 80 percent over the next 20 years.

As for the cost of retrofitting, it's expected to raise the electrical bills of affected customers by an average of \$1.66 per month — a charge that most of them could readily offset by installing more energy-efficient light bulbs.

In short, the evidence against the plant seems strong, the need for action seems clear, and the price of protection seems affordable. The EPA should be given a green light to demand that the Salt River Project install the best available control technology, as federal law provides.

If the view of this world-famous chasm isn't worth preserving in all its natural splendor, nothing is.

* Precisely EPA's approach - to read BACT concepts into BART

Reilly Invoking Clean Air Law To Clear Vista at Grand Canyon

Arizona Power Plant to Be Told to Cut Pollution

2/1/91

By Michael Weisskopf and John Lancaster
Washington Post Staff Writers

In the first use of federal law to protect scenic vistas within a national park, Environmental Protection Agency Administrator William K. Reilly has decided to order an Arizona power plant to stop polluting the air over the Grand Canyon.

The decision, which is expected to be announced today and is subject to agency review, is aimed at thinning the persistent haze that on some winter days makes the canyon's vivid colors and spectacular rock formations all but invisible to a tourist standing on its rim.

Reilly's order would mark the first time that clean air laws generally used to protect public health have been applied solely for aesthetic purposes. The directive has implications for other national parks where views are obscured by industrial pollution, including Shenandoah National Park 60 miles west of Washington.

"Grand Canyon is to the United States what Notre Dame is to France," Reilly said earlier this week. "It's a worldwide symbol of our country's spirit and beauty."

But Reilly had difficulty convincing some administration officials that merely improving views of the canyon was worth the costs—estimated at up to \$2.3 billion—of installing anti-pollution controls on the Navajo Generating Station 80 miles to the northeast.

He backed off the agency's original proposal to remove 90 percent of the sulfurous emissions from the coal-fired plant, accepting 70 percent as a compromise. The concession drew sharp criticism from environmentalists and National Park Service officials, who said even a small amount of pollution would cause significant visibility problems in the pristine atmosphere of northwest and north-central Arizona.

"During [the worst pollution] episodes, it's so dirty you cannot see the bottom of the can-

See AIR, A8, Col. 1

Reilly Seeks To Clean Air At Canyon

AIR, From A1

yon, much less the length of it," said William Malm, a research physicist for the Park Service. "Under those kinds of conditions there's no question that the difference between 70 and 90 percent would be very noticeable."

Navajo's operators contend that no amount of pollution control will improve the canyon's visibility because the plant contributes an insignificant amount of pollution.

"There's a higher and better use for \$2 billion than to try to eliminate a very, very modest contribution that may or may not impair visibility several days a month, several months a year," said D. Michael Rappoport, a spokesman for the Salt River Project, which operates the power plant located in Page, Ariz.

No one disputes that pollution is a problem in the canyon, one of the national park system's "crown jewels" and, with 4 million visitors a year, one of the world's most popular attractions. Using various techniques, the Park Service discovered that the source of pollution varies by season, with smog from Southern California wafting in with southwesterly winds during the summer months.

In the winter, however, the wind blows from the northeast—the direction of the Navajo plant—and most of the haze consists of sulfates, tiny particles formed when sulfur dioxide hits the atmosphere. Navajo is the second-largest source of sulfur dioxide in the West, emitting up to 10 tons of the gas per hour.

A 1987 study by the Park Service concluded that Navajo was the largest source of canyon haze during the winter, generating up to 70 percent of pollution on the most occluded days. Although the National

Academy of Sciences later questioned the percentage, it said the plant is a "significant" contributor to the haze.

Navajo's operators said their studies show the plant contributes to the haze 3 to 4 percent of the time during winter days.

The EPA has responsibility under the Clean Air Act to protect visibility within national parks. But the agency failed to implement the 1977 provision until a lawsuit by the Environmental Defense Fund forced it to formulate a program in 1984.

Complicating the EPA's first case is the fact that Navajo is partly owned by the Interior Department's Bureau of Reclamation—a sister agency of the National Park Service—which uses the electricity to siphon water from the Colorado River to cities and farms in central Arizona. Although the Park Service has been adamant about imposing controls on the facility, some Interior Department officials have argued that the cost to taxpayers of such a measure is not justified by scientific data.

Under Reilly's decision, a 70 percent reduction in Navajo power plant emissions would register a "very apparent" improvement in Grand Canyon visibility on seven winter days, according to government data. But a 90 percent reduction would triple the number of clearer days.

Environmentalists criticized Reilly's proposal for not requiring the tougher cuts, which they said would cost \$10 million a year more, by EPA's estimates, and would result in 14,000 fewer tons of pollutants.

"That would be the best pollution control buy in the country and would provide a cushion for growth," said Robert Yuhnke, of the Environmental Defense Fund.

According to Reilly, the cost difference is so small that Navajo will further reduce emissions to earn "pollution credits" offered in the new Clean Air Act to encourage utilities to cut sulfur dioxide blamed for acid rain in the East. The credits can be sold to other utilities seeking to expand beyond prescribed emission limits.

The Grand Canyon decision has been closely watched by officials at Shenandoah, which in the Park Service's view suffers from the worst air pollution of any national park. Although the acid rain provisions of the new Clean Air Act are expected to cut down considerably on emissions from existing plants, Park Service officials are concerned about plans to build 19 power plants in Virginia.

"We could lose in Virginia what we could be gaining" under the Clean Air Act, said David Haskell, chief naturalist at Shenandoah.

TODAY IN CONGRESS

SENATE

Not in session.
Committees: None

HOUSE

Not in session.
Committees:
Joint Economic—9:30 a.m. Open.
Hearing on the January employment situation. 2359 Rayburn House Office Building.

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EPA Seeks to Ease Pollution Problem At Grand Canyon

By ROSE GUTFIELD

Staff Reporter of THE WALL STREET JOURNAL
WASHINGTON — The Environmental Protection Agency proposed that a power plant partly owned by the government be required to reduce air pollution that is obscuring views of the Grand Canyon.

The proposal, which will be released today, calls for a 70% reduction in the pollution emitted by the Navajo Generating Station, which is one of the biggest coal-fired plants in the West. It is located 12 miles from the northern rim of the canyon. The move marks the first time the government is requiring action to improve the visibility at a national park.

The EPA decision, however, is already being criticized by environmentalists and industry alike. Robert Yuhnke, a senior attorney with the Environmental Defense Fund in Boulder, Colo., called for a more stringent cleanup, saying the EPA proposal offers "no assurance of protection" for the Grand Canyon and other parks in the area. The EPA action resulted from a lawsuit by the environmental group.

John McNamara, an associate general manager for Phoenix-based Salt River Project, which operates the facility, said that the proposal is less stringent than a rule the EPA was considering but that "70% is still a very expensive solution for a very small benefit."

In a separate statement, the Salt River Project said the EPA proposal "lacks both scientific and legal justification."

The Salt River Project estimates the cost of installing anti-pollution equipment at the 2,250-megawatt facility at more than \$1 billion, with annual operating costs of \$70 million over the life of the facility. The plant is 75%-owned by a group of utilities, including Salt River Project. The Bureau of Reclamation, an arm of the Interior Department, owns 24% of the facility. Interior Department officials declined to comment on the EPA decision until they have had time to study the decision.

While recommending a 70% improvement, the EPA is seeking public comment on whether to instead require pollution reductions of 90% or 50%. It is also asking whether it should require that emissions be monitored only in the winter months, when the haze problem is greatest.

Some administration officials predict that the utilities might have a financial incentive to reduce pollution beyond 70% in order to generate pollution credits. Those credits could be sold under the emissions-credit trading system that will be set up under the new Clean Air Act. The pollution reduction is to be phased in, with one-third required in 1993, one-third in 1997 and the rest in 1999.

Other utilities that own interests in the plant are Arizona Public Service Co., Los Angeles Department of Water and Power, Nevada Power Co. and Tucson Electric Power Co.

The EPA will accept comment on the proposal for 60 days, with a public hearing scheduled for March 18. A final decision is due in November.

WSJ
2/1/91



D. Michael Rappoport /
"The EPA's action lacks legal and scientific justification."

EPA to order electric plant to clean up, cut Canyon haze

By Jonathan Sidener
The Arizona Republic

In a move to cut Grand Canyon haze, the U.S. Environmental Protection Agency will announce stringent and expensive pollution-control measures today for the Navajo Generating Station, sources in Washington, D.C., said Thursday.

The EPA, acting after a six-month response and review period, will order the Salt River Project to reduce sulphur emis-

sions from the plant by 70 percent, according to the Washington officials, who spoke on condition they not be identified. The EPA had considered 90 percent reductions.

Reports of the EPA's action were circulating in Washington on Thursday. The SRP, responding to the reports, said it is unsatisfied with the EPA proposal and suggested that the dispute could end up in court.

— See EPA, page A22

-- EPA, from page A1

"The EPA's action lacks legal and scientific justification," said D. Michael Rappoport, the SRP's general manager for governmental affairs. "It's too early in the process to say if we're going to sue, but we've taken the position that they lack justification."

The required alterations would cost the SRP an estimated \$830 million, spokeswoman Teri Morris said. A 90 percent reduction would cost an estimated \$1 billion, she said.

The SRP, which manages the coal-fired generating station, would be required to add pollution-control "scrubbers," which force a plant's exhaust through a water and lime solution to remove sulphur.

A 60-day public-comment period will include hearings in Arizona.

The EPA proposal is the latest step in a controversy over the power plant's role in producing winter haze at the canyon. At times, the haze becomes so dense that visitors to the canyon's South Rim cannot see the North Rim, about 10 miles away.

The controversy over the 16-year-old power plant dates back to at least 1982. Environmentalists long have asserted that the plant near Page is a primary cause of the haze. In 1982, the private Environmental Defense

Fund filed suit to force the government to investigate.

Since then, a series of studies has done little to clear up the controversy. A 1987 National Park Service report concluded that the plant is a "major contributor" to winter haze.

In response, the SRP commissioned its own report, which reached vastly different conclusions.

That study, conducted by independent scientists, indicated that the Navajo station contributed to impaired visibility 4 percent to 7 percent of the time, much of that at night.

In October, a National Research Council study concluded that the massive station has "contributed significantly" to winter haze.

The Research Council study concluded that the power plant is not the sole contributor to canyon haze. If the plant were equipped with pollution-control devices, winter haze "would most likely be reduced but not eliminated," the report said.

The SRP maintains that about two-thirds of the haze occurs naturally, with the remaining third caused by a variety of sources, including pollution blowing in from California.

The plant is 24 percent owned by the U.S. Bureau of Reclamation and utilities including Arizona Public Service Co., Tucson Electric Power and Nevada Power.

E.P.A. Seeks to Curb Haze at Grand Canyon

WASHINGTON, Jan. 31 (AP) — The Environmental Protection Agency plans to propose strict and expensive pollution controls on an Arizona electric power plant to curb dirty air over the Grand Canyon, Bush Administration officials said today.

The agency will propose that sulfur dioxide emissions from the Navajo Generating Station, which is 16 miles from Grand Canyon National Park, be cut by at least 70 percent, according to the officials, who spoke on the condition that they not be identified.

An environmental agency spokesman, Dave Ryan, said he could not comment on the proposal except to confirm that the agency would have an announcement concerning the Arizona power plant on Friday.

The dispute about pollution over the Grand Canyon and what is to blame has raged for several years. Two years ago the National Park Service concluded that the Navajo station was the source of haze over the canyon. Operators of the plant have repeatedly

denied blame, arguing that the haze was caused by a variety of sources.

As word of the environmental agency's intentions began to circulate today, officials of the Salt River Project, the irrigation district that operates the plant, again issued a statement denying that the canyon haze was caused by the power plant.

D. Michael Rappoport, assistant general manager for government affairs for the utility, said the planned action by the agency "lacks both scientific and legal justification."

The Arizona utility has estimated that the cost of scrubbers needed to reduce the smokestack gases would cost at least \$2.5 billion. The environmental agency estimates that compliance with its planned restrictions would cost \$70 million a year over the life of the plant.

The plant provides power to a large area. It is owned by private and public utilities in California, Nevada and Arizona and the Bureau of Reclamation, a

sister agency in the Interior Department of the National Park Service.

The plant burns 24,000 tons of coal daily, releasing an estimated 312 tons of sulfur dioxide into the air, the agency said. The sulfur dioxide is transformed in the air into fine particles of sulfuric acid and other compounds that the agency said make up the haze.

Verdict in Rare-Book Thefts

DES MOINES, Jan. 31 (AP) — A 42-year-old man who had contended that he was driven by delusions to steal books was convicted in a Federal court here today of the theft of millions of dollars of rare books from libraries and museums in 45 states and Canada. A jury deliberated about four hours before returning its verdict against the defendant, Stephen Blumberg. Mr. Blumberg, who had pleaded not guilty by reason of insanity and had remained free on bond, was immediately taken into custody by Federal marshals.

Grand Canyon Haze Plan Is Disputed

By KEITH SCHNEIDER
Special to The New York Times

WASHINGTON, Feb. 1 — One owner of a giant coal-burning power plant in northern Arizona accused the Environmental Protection Agency today of basing a pivotal decision aimed at reducing haze in the Grand Canyon on flawed scientific research.

"The evidence we have collected suggests that we are being blamed for a large part of the haze problem in the Grand Canyon that we are not responsible for," said John R. McNamara, associate general manager for corporate engineering and power at Salt River Project, a Phoenix utility that is one of the power plant's six owners. "They are using inadequate research to require us to spend a very large amount of money for what we believe will be very little improvement."

The Navajo Generating Station, completed in 1976 in Page, Ariz., is 15 miles north of the entrance to the Grand Canyon. On Thursday, officials of the E.P.A. disclosed that the agency had reached a preliminary decision to require the plant's owners — five utilities and a unit of the Interior Department — to install enough pollution control equipment to reduce the emissions of sulfur dioxide by 70 percent.

It was the first time the E.P.A. had invoked the Clean Air Act, normally used to protect public health, to solve a visibility problem. If the decision becomes final, perhaps later this year, it could become a precedent for taking action to reduce sources of pollution that cause haze in many other national parks, including the Shenandoah National Park 60 miles west of Washington.

The principal cause of the Grand Canyon

A power plant owner cites flaws in pollution research.

Grand Canyon haze is sulfur dioxide, a gas that reacts with other chemicals and sunlight in the atmosphere to form tiny particles. The National Park Service has blamed the haze in the Grand Canyon on the Navajo Generating Station since a study in 1987 traced a marker chemical to the plant.

William K. Reilly, the Administrator of the E.P.A., said in a statement today that the decision to require the plant to install pollution control equipment "reflects President Bush's commitment to clean air."

Mr. Reilly added, "The Grand Canyon, a natural resource of immense value and a worldwide symbol of our country's spirit and beauty, routinely is shrouded by a wintertime haze that limits visibility and damages enjoyment of the vistas. Action must be taken now to protect one of earth's most priceless natural wonders."

Mr. Reilly said that the agency's decision was derived from substantial evidence provided by the National Park Service, and that the evidence had been reviewed and supported by the National Academy of Sciences. The Navajo Generating Station, the environmental agency said today in a statement, "is a significant contributor to the visibility problem in the Grand Canyon."

"Based on the various kinds of analyses we have in hand, including the National Academy of Sciences, and based on our experience, we believe the science shows there will be significant improvement in visibility," Hank Habicht, deputy administrator of the Environmental Protection Agency, said in an interview. "The other important fact here is that it is a proposal, and we recognize there are difficult technical issues. We are open minded in the direction of either imposing final requirements that are more stringent or less stringent at the end of the process."

Equipment Will Cost Millions

Mr. McNamara of Salt River Project said reducing sulfur dioxide emissions from the plant, which burns 24,000 tons of low-sulfur coal every day, will require the plant's owners to spend \$400 million on pollution control equipment. Such equipment, he said, also costs roughly \$100 million a year in costs of operation, maintenance and financing. Mr. McNamara said a \$13.5 million study his company has helped to sponsor in the last year strongly suggested that such expenditures would produce none of the significant improvements the E.P.A. expects.

The study, due to be completed in the next few weeks, shows that the Navajo Generating Station is responsible for poor visibility on perhaps five or six days of the winter, according to Dr. Jerry Shapiro, an engineer and vice president of IESCO, an environmental consulting company in San Francisco that was hired by the owners of the plant to help conduct the research.

"The subject of visibility is relatively new and difficult and there is very little



Paul Contin
"Action must be taken now," said William K. Reilly, head of the Environmental Protection Agency.

data on it," said Dr. Shapiro. "What we have found is that the visibility problem comes mainly from the west and the south and not from the north, where the plant is located. I'm not trying to say there is no man-made cause of haze in the Grand Canyon. But it is too simple to blame it on the power plant."

Dr. Shapiro said scientists have found historical documents from the late 1880's that describe a "haze that is peculiar" to the Grand Canyon.

"We have testimony from a photographer who has been taking pictures in the canyon for 50 years," said Dr. Shapiro, "and he said he noticed the haze started coming in the 1950's," year's before the Navajo station's 1976 completion.

The Phoenix Gazette

METRO

FRIDAY, FEBRUARY 1, 1991

EPA seeks cut in haze over Grand Canyon

From GAZETTE news services

WASHINGTON — The Environmental Protection Agency, trying to reduce haze and improve visibility over the Grand Canyon, said today that it will impose stringent pollution controls on an electric power plant near the canyon.

The EPA said the proposed action would cut sulfur emissions from the Navajo Generating Station in Arizona by 70 percent, although officials said they hoped the utility would install equipment that would reduce emissions even further.

"Action must be taken now to protect one of Earth's most priceless natural wonders," EPA Administrator William Reilly said in

a statement. The action is the first time that the agency has moved to regulate pollution under the Clean Air Act solely to improve visibility.

The EPA said the utility would be allowed to phase in new emission control technology, probably expensive scrubbers, between 1995 and 1999. A final regulation is expected to be issued later this year.

The power plant, located 16 miles from the edge of Grand Canyon National Park, is operated by the Salt River Project and provides electricity over much of the region. It burns about 24,000 tons of coal daily, releasing an estimated 13 tons of sulfurous pollution an hour.

Although some EPA officials had argued for a reduction of 90

percent of the plant's emissions of sulfur oxides, administration sources said Thursday that the compromise position shows firm determination by the administration to carry out the intent of the 1990 Clean Air Act.

In Phoenix, SRP spokeswoman Teri Morris said the utility was pleased that the government apparently was backing away from a previous proposal asking that emissions be reduced by 90 percent.

But, she said, "We are still concerned about installing scrubbers when studies have shown that it will only have minimal improvement on pollution at the Grand Canyon."

The utility is expected to install expensive scrubbers to meet the proposed emission requirements.

Morris said SRP customers could expect a 2 percent to 3 percent hike in utility rates if the EPA requires emissions to be cut by 70 percent.

The EPA estimated that average homeowner electricity bills would increase \$2.30 per month as a result of the new pollution controls.

A public hearing on the decision

has been scheduled for Phoenix on March 18.

Barring a reversal of the environmental agency, the decision being announced today will become final in about 60 days.

Includes information from The Associated Press, the Los Angeles Times and Gazette reporter David Hoyt.

The Phoenix Gazette

METRO

SATURDAY, FEBRUARY 2, 1991

Highway of haze

Navajo power plant pollutes 8 parks, environmentalists claim

By David Hoyer
THE PHOENIX GAZETTE

Haze from the Navajo Generating Station pollutes not only the Grand Canyon but seven other national parks in northern Arizona, Utah and Colorado, the Environmental Defense Fund said Friday.

Because of the widespread pollution it found in a recent study, the defense fund said emission standards just proposed for the plant by the federal Environmental Protection Agency should be more stringent.

"For a number of months of the year, the (pollution) effects are just as bad in these other parks as when they blow into the Grand Canyon," said Bob Yuhnke, senior attorney in the defense fund's Boulder, Colo., office.

The EPA on Friday issued a recommendation that the coal-burning plant near Page reduce its emissions by 70 percent, probably through the use of expensive air scrubbers installed by 1999.

The move could cost up to \$128 million annually, when figured in 1988 dollars, and could add about \$2.30 to monthly bills for customers of the Salt River Project, which operates the plant, according to EPA figures.

The EPA noted that Friday's action "reflects President Bush's commitment to clean air" and that reducing winter haze at the canyon was important because of the canyon's value as a natural resource.

The announcement met a court deadline by which the EPA was directed to take action against pollution over the canyon. The deadline was set as a result of a 1982 lawsuit filed by the defense fund to

"We think it doesn't make sense to require all those costs and not get the full benefit of state-of-the-art technology."

Bob Yuhnke
Environmentalist

get EPA officials to investigate the pollution.

Yuhnke said the defense fund's study, conducted by a Boulder-based air quality analysis firm, proves that the government should require emissions at the plant to be reduced by up to 90 percent.

SRP has said that reducing emissions by 70 percent could cost \$830 million, and a 90 percent reduction could cost the utility up to \$1 billion.

Yuhnke said the extra money needed to reduce emissions by 90 percent would be well spent.

"We think it doesn't make sense to require all those costs and not get the full benefit of state-of-the-art technology," he said.

A study of wind patterns across several states concludes that emissions from the plant are likely to be transported by regional winds into one or more of the eight national parks "most of the time."

The eight parks are the Grand Canyon, Petrified Forest, Zion, Bryce Canyon, Capitol Reef, Canyonlands, Mesa Verde

See HAZE, Page B2

■ HAZE

From B1

and Arches.

Yuhnke said a previous study conducted by the National Park Service failed to consider the effects of the plant's emissions anywhere but the Grand Canyon. A later study by the SRP, he added, collected information from other areas, but never reported results.

"We felt it was necessary for someone to ask the question: What the hell does happen when the plume blows in the other direction?" he said.

EPA spokesman Dave Stonefield said the agency was aware that emissions from the plant probably affect areas besides the Grand Canyon. But, he said, the EPA felt the impact on just the Grand Canyon was enough to warrant action against the plant.

Stonefield said the EPA will consider the results of the defense fund's study while it takes public comment this spring, and that it's possible the agency could be convinced to increase its emission cutback requirement to 90 percent.

"This is a very difficult thing for the government to do," he said. "We're essentially controlling ourselves. Both sides of the issues have to be weighed here."

The plant is operated by the SRP, but owned by a consortium that includes the SRP, Arizona Public Service Co., the U.S. Bureau of Reclamation, the Los Angeles Department of Water and Power, the Nevada Power Co. and Tucson Electric Power Co.

Teri Morris, spokeswoman for the SRP, scoffed at the defense fund's study, and said the plant should not be blamed for pollution that comes from a variety of sources.

A study completed last year showed that some pollution over the Grand Canyon could come from as far away as Los Angeles.

"They've done some rough and dirty calculations," Morris said of the defense fund. "The other studies that have been done to date show this is a regional problem. A scrubber at the Navajo wouldn't clean up anything by itself."

The Mesa Tribune

Friday

February 1, 1991

EPA to urge 70% cut in Navajo plant pollution

Reduction of haze over Canyon sought

By Jeff Nosmith
Tribune/Cox News Service

WASHINGTON — The Environmental Protection Agency will propose today that air pollution from a huge electric power plant in northern Arizona be reduced by 70 percent in an effort to remove a controversial winter haze from the Grand Canyon, sources said.

Owners of the Navajo Generating Station claim it will cost up to \$2.5 billion to meet reduced emission requirements. The money would come from rate increases and tax funds.

The 2,250-megawatt, coal-fired power plant is near Page, on the Arizona-Utah border. It was blamed by a National Park Service study several years ago for sulfur dioxide emissions that during winter months dull the views in Grand Canyon National Park, 50 miles away.

However, owners of the plant — which provides electrical power for the Phoenix, Los Angeles and Tucson areas — argue that most of the haze comes from other sources.

The owners also contend that expensive pollution control equipment would do little to improve visibility in the park.

EPA officials refused Thursday to respond to questions about emission reduction requirements, which the agency is under a deadline to propose by today.

However, sources said the agency's decision, which takes the form of a formal proposal, would require a reduction in visible emissions of 70 percent if finalized.

It is the first use of federal law to protect scenic vistas within a national park.

The EPA also will ask for public comment on alternative plans to reduce emissions by 50 percent and 90 percent, the sources said.

"The action recommended by the EPA proposing stringent controls at the Navajo Generating Station

lacks both scientific and legal justification," said D. Michael Rappoport, assistant general manager for government affairs of the Phoenix-based Salt River Project, one of the plant's owners.

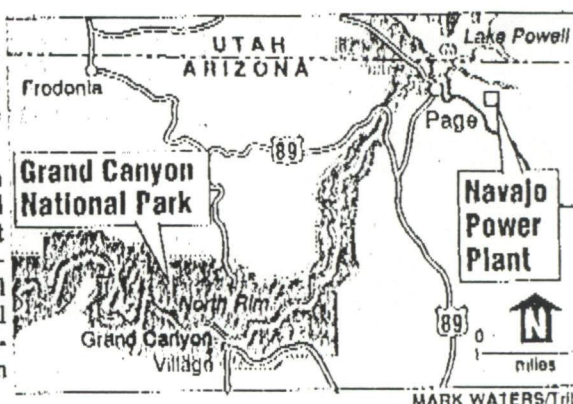
"The Navajo Generating Station environmental policy is simple and consistent. We will actively support action, policies and controls that provide commensurate environmental benefits. The EPA proposals will require extensive expenditures resulting in no perceptible improvement in visibility at the Grand Canyon."

The controversy over the plant and canyon haze has put the EPA between two other federal agencies — one calling for haze reduction and the other owning an interest in the plant.

The National Park Service says that in a 1987 experiment it released tracer chemicals from one of the plant's tall stacks and found the chemicals hours later in the canyon. The experiment convinced park service scientists that the plant is a chief contributor to episodes of haze that dim the canyon's most spectacular vistas during winter months.

The validity of the experiment has been challenged by owners of the plant, which in addition to the Salt River Project include the U.S. Bureau of Reclamation. Like the Park Service, the Bureau of Reclamation is a part of the Department of Interior.

The EPA's canyon visibility order would mark the first time that clean-air laws generally used to protect public health have been applied solely for aesthetic purposes.



W Post 2/1/91

Reilly Invoking Clean Air Law To Clear Vista at Grand Canyon

Arizona Power Plant to Be Told to Cut Pollution

By Michael Weisskopf and John Lancaster
Washington Post Staff Writers

In the first use of federal law to protect scenic vistas within a national park, Environmental Protection Agency Administrator William K. Reilly has decided to order an Arizona power plant to stop polluting the air over the Grand Canyon.

The decision, which is expected to be announced today and is subject to agency review, is aimed at thinning the persistent haze that on some winter days makes the canyon's vivid colors and spectacular rock formations all but invisible to a tourist standing on its rim.

Reilly's order would mark the first time that clean air laws generally used to protect public health have been applied solely for aesthetic purposes. The directive has implications for other national parks where views are obscured by industrial pollution, including Shenandoah National Park 60 miles west of Washington.

"Grand Canyon is to the United States what Notre Dame is to France," Reilly said earlier this week. "It's a worldwide symbol of our country's spirit and beauty."

But Reilly had difficulty convincing some administration officials that merely improving views of the canyon was worth the costs—estimated at up to \$2.3 billion—of installing anti-pollution controls on the Navajo Generating Station 80 miles to the northeast.

He backed off the agency's original proposal to remove 90 percent of the sulfurous emissions from the coal-fired plant, accepting 70 percent as a compromise. The concession drew sharp criticism from environmentalists and National Park Service officials, who said even a small amount of pollution would cause significant visibility problems in the pristine atmosphere of northwest and north-central Arizona.

"During [the worst pollution] episodes, it's so dirty you cannot see the bottom of the can-

See AIR, A8, Col. 1

AIR, From A1

yon, much less the length of it," said William Malm, a research physicist for the Park Service. "Under those kinds of conditions there's no question that the difference between 70 and 90 percent would be very noticeable."

Navajo's operators contend that no amount of pollution control will improve the canyon's visibility because the plant contributes an insignificant amount of pollution.

"There's a higher and better use for \$2 billion than to try to eliminate a very, very modest contribution that may or may not impair visibility several days a month, several months a year," said D. Michael Rappoport, a spokesman for the Salt River Project, which operates the power plant located in Page, Ariz.

No one disputes that pollution is a problem in the canyon, one of the national park system's "crown jewels" and, with 4 million visitors a year, one of the world's most popular attractions. Using various techniques, the Park Service discovered that the source of pollution varies by season, with smog from Southern California wafting in with southwesterly winds during the summer months.

In the winter, however, the wind blows from the northeast—the direction of the Navajo plant—and most of the haze consists of sulfates, tiny particles formed when sulfur dioxide hits the atmosphere. Navajo is the second-largest source of sulfur dioxide in the West, emitting up to 10 tons of the gas per hour.

A 1987 study by the Park Service concluded that Navajo was the largest source of canyon haze during the winter, generating up to 70 percent of pollution on the most occluded days. Although the National

Academy of Sciences later questioned the percentage, it said the plant is a "significant" contributor to the haze.

Navajo's operators said their studies show the plant contributes to the haze 3 to 4 percent of the time during winter days.

The EPA has responsibility under the Clean Air Act to protect visibility within national parks. But the agency failed to implement the 1977 provision until a lawsuit by the Environmental Defense Fund forced it to formulate a program in 1984.

Complicating the EPA's first case is the fact that Navajo is partly owned by the Interior Department's Bureau of Reclamation—a sister agency of the National Park Service—which uses the electricity to siphon water from the Colorado River to cities and farms in central Arizona. Although the Park Service has been adamant about imposing controls on the facility, some Interior Department officials have argued that the cost to taxpayers of such a measure is not justified by scientific data.

Under Reilly's decision, a 70 percent reduction in Navajo power plant emissions would register a "very apparent" improvement in Grand Canyon visibility on seven winter days, according to government data. But a 90 percent reduction would triple the number of clearer days.

Environmentalists criticized Reilly's proposal for not requiring the tougher cuts, which they said would cost \$10 million a year more, by EPA's estimates, and would result in 14,000 fewer tons of pollutants.

"That would be the best pollution control buy in the country and would provide a cushion for growth," said Robert Yuhnke, of the Environmental Defense Fund.

According to Reilly, the cost difference is so small that Navajo will further reduce emissions to earn "pollution credits" offered in the new Clean Air Act to encourage utilities to cut sulfur dioxide blamed for acid rain in the East. The credits can be sold to other utilities seeking to expand beyond prescribed emission limits.

The Grand Canyon decision has been closely watched by officials at Shenandoah, which in the Park Service's view suffers from the worst air pollution of any national park. Although the acid rain provisions of the new Clean Air Act are expected to cut down considerably on emissions from existing plants, Park Service officials are concerned about plans to build 19 power plants in Virginia.

"We could lose in Virginia what we could be gaining" under the Clean Air Act, said David Huskell, chief naturalist at Shenandoah.

EPA'S DRAFT PROPOSAL TO IMPROVE VISIBILITY IN THE GRAND CANYON NATIONAL PARK

The Environmental Protection Agency (EPA) is under a Court order of the U.S. District Court for Northern California to propose best available retrofit technology (BART) for the Navajo Generating Station by February 28, 1991.

BACKGROUND

Haze is caused by suspended particulates that scatter and absorb light. Suspended particulates can dull colors, reduce contrast, and decrease visual range. Sulfates (SO_4), which account for one-third to one-half of the particulate concentration in the Grand Canyon, are largely the result of the transformation in the atmosphere of sulfur dioxide (SO_2) emissions from a variety of sources--including coal-fired electric powerplants, copper smelters, and other activities in the populated areas of Arizona and Southern California.

The Navajo Generating Station (NGS) is a 2250 megawatt (MW) coal-fired power plant located in Page, Arizona; about 15 miles northeast of the Park. NGS is owned jointly by the Bureau of Reclamation (Department of Interior), the Salt River Project,¹ and several electric utilities. NGS meets Arizona's emission limit of 1.0 lbs SO_2 /million Btu by firing very-low sulfur coal.² Even with this very stringent emission limit the NGS at full operation emits over 200 tons of SO_2 daily.

The WHITEX Study: Over the winter of 1987, NGS participated in the Winter Haze Intensive Tracer Experiment (WHITEX); a study by the National Park Service to evaluate empirical techniques for determining sources of haze. WHITEX focused on the area between the Grand Canyon and Canyonlands National Park because of the prevailing wind flow to the east -- as a result, only one monitoring site was located at the Grand Canyon, the remaining monitoring sites were located north and east of the Grand Canyon. (See attached map.) WHITEX injected deuterated methane into the smoke stacks of NGS to trace the flow of emissions. Deuterated methane was found at the Hopi Point monitoring station in the Grand Canyon.

The Park Service used a novel statistical analysis to conclude that NGS emissions contributed to wintertime visibility

¹ The Salt River Project is a special political subdivision of Arizona supplying area consumers with water and electricity.

² The federal new source performance standard for NGS is 1.2 lbs SO_2 /million Btu; under State standards NGS meets a 1.0 lbs SO_2 /million Btu limit.

degradation in the Grand Canyon. On September 5, 1989, after reviewing the draft WHITEX report, EPA proposed to attribute a significant portion of wintertime visibility impairment in the Grand Canyon to the NGS.

The National Academy of Sciences Review of WHITEX: WHITEX is a controversial study. The Department of Interior requested that the National Academy of Sciences (NAS) review the WHITEX attribution methodology and conclusions in order to resolve a dispute between the Park Service and the Bureau of Reclamation. The NAS released its review on October 11, 1990. The NAS found:

WHITEX did not quantitatively determine the fraction of [haze] in the Grand Canyon attributable to NGS emissions. The conceptual framework for [the analysis] involved physically unrealistic simplifications ... especially damaging were the absence of measurements below the rim of the grand canyon and the paucity of background measurements ... the WHITEX data also show that there are important sulfur sources in addition to NGS that appear to contribute to regional background [haze.]

Nevertheless, NAS concluded that NGS contributed significantly to haze in the Grand Canyon at some times during the study period. At the same time, the NAS also concluded that the WHITEX data analysis would not allow a quantitative determination of the fraction of the haze problem attributable to NGS.

BEST AVAILABLE RETROFIT TECHNOLOGY

Section 169A of the CAA requires EPA to establish BART level emission controls for major air pollution sources "which may reasonably be anticipated to cause or contribute to any impairment of visibility" in certain Federal lands. Since NAS concluded that, at times, NGS contributed significantly to haze in the Grand Canyon, it appears that BART controls are required.

Under the CAA, a BART determination is to include

the costs of compliance, the energy and non-air quality environmental impacts, any existing pollution control technology in use at the source, the remaining useful life of the source, and the degree of improvement in visibility.

EPA's Draft Proposed BART Standard: EPA's draft proposed BART determination for NGS would limit emissions to 0.1 lbs SO₂/million Btu; a 90 percent reduction from the current limit.

The Cost of Compliance: According to EPA estimates, the required 90 percent control will cost \$125 million per year.

Energy and Non-Air Quality Impacts: Based on available data, OIRA estimates that the technology required to meet the draft

BART emissions level will produce 1.2 billion gallons of wastewater, and an additional 5 million tons of sludge each year. EPA estimates that this control requirement will reduce the energy output of the plant by 29 MW.

Existing Pollution Control Technology: NGS has no post-combustion controls on its SO₂ emissions. Rather, NGS limits emissions by firing very-low sulfur coal, typically 0.45-0.55 percent sulfur. NGS complies with Arizona's emission limit which is more stringent than the applicable Federal standard.

The Remaining Useful Life of the Source: Unknown.

The Visibility Improvement: According to EPA, a 90 percent reduction in emissions for NGS will increase average visual range in the Grand Canyon during the wintertime by 29 km, from 200 km to 229 km.³ This estimate is based on the WHITEX study. However, NAS has stated that no quantitative estimate of visibility improvement could be made from the WHITEX data. This NAS conclusion completely undermines the credibility of EPA's predicted improvement in visibility.

ALTERNATIVES

Option 1: Less Stringent Control Alternatives

Over the last several months, the Office of Information and Regulatory Affairs (OIRA) staff have offered to conclude review if EPA would propose less stringent 50 percent and 70 percent control levels as coequal options with the 90 percent control level already set out in the draft proposal. More recently, we understand that NGS has approached EPA and indicated that it would be willing to accept an alternative based on a 70 percent control level (and some delay in the implementation date that would allow NGS to explore several experimental approaches to control SO₂ emissions). Based on these developments, the Deputy Assistant Administrator for Air reported (on January 3) that EPA would now be willing to proceed along the lines suggested by OIRA.

We are not certain of the benefits or costs of these less stringent control alternatives. EPA's analysis indicates that a 90 percent control requirement would be more cost-effective than less stringent control levels. However, NGS takes issue with several critical assumptions of EPA's analysis and suggests that a less stringent control requirement would be more cost effective.

³EPA defines the wintertime visibility "season" as including the months from November through March. EPA believes that controlling NGS emissions may also improve visibility in other seasons but does not provide evidence to support this position.

Option 2: Defer Proposal/Prepare Visibility Study Under New Clean Air Amendment

DOE staff argue that EPA should ask the Court to defer its deadline for a proposed rule in order to allow EPA to prepare a new study of visibility problems in the West (as required by Section 169B of the Clean Air Act (CAA) Amendments of 1990). DOE argues that EPA rulemaking for NGS would establish an important precedent in regulating major sources to protect western visibility. The 1990 CAA Amendments afford an opportunity to establish a well-conceived, comprehensive approach to the problem (rather than proceeding piecemeal with regulation of NGS).

Option 3: No Further Control/Define Current Control Level at NGS as BART

Under Section 169A, EPA is to consider a variety of factors, including the cost of compliance, energy and non-air quality environmental effects, and the degree of improvement in visibility. While EPA claims that 90 percent control of NGS emissions would yield a 29 km increase (roughly 15 percent increase) in visual range, the NAS study completely undermines the credibility of a quantitative estimate of the likely improvement in visibility. Given the flexibility provided by Section 169A and the substantial costs and marginal visibility improvement of further control of NGS emissions, OIRA believes EPA could determine that the current emission controls represent BART and no further control is required.

Attachment

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NEW YORK, NEW YORK
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RICHMOND, VIRGINIA

January 10, 1991

The Honorable William G. Rosenberg
Assistant Administrator for Air
& Radiation
United States Environmental Protection
Agency
401 M Street, S.W.
Room 937 West Tower
Washington, D.C. 20460

Dear Mr. Rosenberg:

Under the court-imposed deadline, the Environmental Protection Agency must decide by February 1 whether or not to propose BART limitations for the Navajo Generating Station. The February 1990 EPA staff draft proposal would require Navajo to install a 90 percent (3 hour averaging time) scrubber that would have to achieve sulfur dioxide emission reductions in excess of 95 percent on a long term basis. That draft proposal was based upon the National Park Service's WHITEX analyses which concluded that NGS was responsible for 40 percent of the average winter time haze in the Canyon and 60 to 70 percent during episodes.

Following release of the staff proposal last February, the National Research Council issued a report highly critical of the NPS's WHITEX quantifications. Also, the Salt River Project (SRP) completed a comprehensive study of winter visibility in Grand Canyon. Preliminary results from SRP's study refute the WHITEX conclusions that Navajo was a dominant contributor to winter haze in the Canyon.

As we have explained in earlier letters, SRP believes that the NRC Report on WHITEX and the preliminary results from the SRP study require reconsideration of the staff draft scrubbing proposal. SRP also believes that there are legal barriers under EPA's 1980 visibility rules to the Agency's regulating a source that is at most only a contributor to regional haze.

While it is clear that the Agency does not share our view as to the scope of its legal authority to impose BART limits, SRP believes that the Agency should consider alternatives to its 90

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percent scrubbing proposal in view of its extremely high cost and the marginal visibility improvements that would result from installing and operating scrubbers at this time. SRP management has developed an alternative to the Staff scrubber proposal which we believe is fully consistent with the Agency's legal position that Navajo's emissions can be regulated under current rules and is responsive to SRP's concerns regarding the disparity between control costs and visibility benefits.

The alternative being proposed by SRP management, discussed below, would assure that any emission reductions would cost much less than the staff draft proposal and would take place no later than the earliest time that major contributors to haze in the Canyon (e.g., other major stationary sources in the region and urban sources) would be reducing emissions. The SRP alternative would be integrated into the comprehensive program to evaluate visibility called for by the 1990 Amendments, a research program that SRP would support. The following discussion outlines the SRP proposal.

If you are interested in pursuing this approach, we would recommend that we and your counsel seek a 60 day extension in the February 1 court deadline. This 60 day extension will allow SRP and your staff to develop a detailed proposal and will provide necessary time to have that proposal reviewed and approved by you and the Administrator, by the SRP Board, and by the other Navajo participants.

DISCUSSION

SRP's alternative has the following elements:

--SRP would agree to help fund, and otherwise to cooperate fully with, the regional haze studies that EPA is required to conduct under the 1990 Amendments, to assure that EPA can collect the scientific and technical data necessary to permit a full assessment and evaluation of all sources of haze in the Grand Canyon.

--EPA would expedite establishment of the Grand Canyon Visibility Transport Commission. SRP would cooperate with the Governors of the affected States and the Commission in the conduct of its inquiry.

--SRP would agree to undertake tests to try to demonstrate the feasibility of several promising clean coal technologies that may provide much lower cost alternatives to conventional scrubbers on plants fired by low sulfur western coal. If one of the technologies were demonstrated to achieve an agreed upon

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minimum removal efficiency at an agreed upon cost, SRP would commit to install that technology and operate it on a seasonal basis to address the alleged effect of the NGS on wintertime visibility.

--SRP would agree that, if none of the technologies met the test criteria, it would then install pollution control devices that would remove at least 70% of uncontrolled SO₂ emissions measured on an annual basis. This technology would not have to be operational before January 1, 2000, the date upon which the first allowances would be issued to the plant under the 1990 Amendments.

This alternative approach has several distinct advantages. First, it avoids very costly controls that will at best only marginally improve visibility a few hours in the winter. Second, it assures that any haze program will be based upon reliable science and sufficient data, rather than the flawed WHITEX experiment, which has driven the EPA Staff draft. Third, it allows coordination of the NGS program with the regional haze studies to be undertaken by the EPA and the recommendations of the Grand Canyon Visibility Transport Commission. This assures maximum input of the States into the ultimate solution.

In terms of ultimate emissions reductions, the alternative technological test program offers the potential for immediate, local pollution reductions at much lower cost than scrubbers. New low cost technologies, if demonstrated, can make a major contribution to long-term pollution reduction efforts at plants burning low sulfur coal that are potential targets for cost benefit based visibility regulation. Finally, if alternatives cannot be demonstrated, this approach will assure that there will be long-term, large-scale reductions in SO₂ emissions from the NGS, with controls installed under deadlines that will permit the market for allowances to help finance the substantial capital and operating costs that otherwise would have to be absorbed by the Arizona economy and Federal taxpayers.

Regional Visibility Studies. Administrator Reilly has repeatedly acknowledged the critical importance of basing EPA rules on solid scientific work. He also has recognized the dangers of the "ready, fire, aim" type of regulation, when rules are based on emotional reactions to an environmental issue rather than considered policy analysis. The draft NPRM reflects both flaws, particularly its proposed reliance on the WHITEX experiment as the basis for regulation.

The SRP alternative will provide a far more reliable scientific and technical basis for considering a response to haze

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in the Grand Canyon. The 1990 Salt River Project study of NGS represents a quantum leap forward in the sophistication and reliability of region-wide atmospheric studies. That experience will be invaluable in conducting proper studies to cure one of the NRC's principal criticisms of WHITEX, its failure to consider the other point and regional sources that obviously contribute to haze in the Grand Canyon.

SRP is prepared to help improve those studies by assisting with their funding, design, and implementation. Especially with the strain on EPA resources caused by implementation of the 1990 Amendments and the fiscal constraint caused by Federal budget issues, such financial contributions are of substantial value in accelerating the timetable and permitting more thorough studies.

Coordination with the Visibility Transport Commission. This feature offsets one of the principal flaws in the EPA Staff draft proposal, the likelihood that a piecemeal approach of source-by-source regulation would not actually result in significantly improved visibility in the Grand Canyon.

While the haze is clearly regional, little is now known of the contributions made by its sources, or at what cost they could be controlled. Permitting the Governors to study the problem on a regional basis and devise a comprehensive solution offers the best opportunity for a cost effective approach to the problem. In particular, this approach will allow coordination of the regional haze program with other programs required by the 1990 Amendments, notably the urban nonattainment and air toxic programs. Under this approach, in the event that the clean coal demonstration program is unsuccessful, the year 2000 deadline to install other control technology would tie in directly with the emission reductions that the urban areas are achieving, and would correspond with any regional reductions arising out of the visibility studies conducted under the 1990 Amendments.

Administrator Reilly recently has written the Governors emphasizing their critical role in implementation of the 1990 Amendments. The Commission, as a forum for direct study and planning by the Governors of all affected States, thus is an ideal forum for consideration of the visibility problem from both a Federalism and an environmental perspective.

Clean Coal Technology Program. The centerpiece of the SRP proposal is the commitment to conduct a test of promising clean coal technologies as an alternative to scrubbers. This program offers the prospect of both immediate local emissions reductions and a long-term advance in the state-of-the-art of control

HUNTON & WILLIAMS

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Page 5

technologies for low sulfur coal plants that could produce environmental benefits throughout the west. This approach is consistent with the clean-coal technology incentives incorporated in the Senate passed version of the 1990 Amendments.

The Salt River Project has preliminarily explored the feasibility of a significant number of alternative technologies that might substantially reduce SO₂ emissions without requiring the enormous expense and loss of electricity capacity imposed by scrubbers. Based on that initial review, it believes that several approaches, including a sodium injection technology and a novel clay injection technique developed by TRIMEX warrant further testing.

SRP is willing to develop and implement a full-scale experimental project for promising technologies. Precise identification of technologies to be tested and test conditions would be devised in consultation with EPA staff.

SRP is further willing to commit that, if one of these technologies were demonstrated to reduce SO₂ emissions efficiently and cost effectively, SRP would install it and operate it in the winter time. As part of the design of the program, the NGS and EPA would agree upon the minimum removal efficiency, cost and other criteria that must be satisfied by the alternatives to be tested.

Control Technology Underwritten by the Allowance Market.
SRP would commit that, if none of the clean coal technologies satisfied the test criteria, it would then select and install pollution control equipment that would remove at least 70% of the uncontrolled SO₂ emissions measured on an annual basis. This technology would be operational on January 1, 2000, the date when the first allowances will be issued to the plant.

Deferring selection of a 70% control system until after completion of the test, that is until the mid-1990's, offers several advantages. First, it would allow the NGS to take advantage of any other developments in pollution control technology in the interim, as long as the ultimate performance standard was met. Second, coordinating the receipt of allowances with the installation of higher cost controls will allow the market to underwrite part of the capital and operating costs of controls. Accordingly, the net costs to the ratepayers of Arizona and the Federal budget will be significantly less than they would be if control costs had to be incurred at an earlier time.

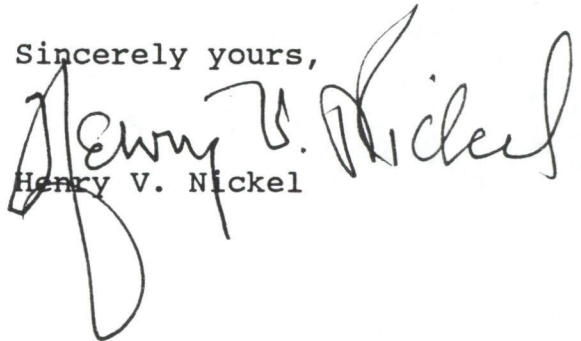
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CONCLUSION

We appreciate your consideration of this proposed alternative to the current staff position. SRP would be pleased to answer any questions you or your assistants may have about this proposal. In this regard, two SRP senior management representatives who are responsible for this proposal -- John McNamara and Richard Silverman -- will be in Washington this Thursday and Friday and would be available to meet with you personally if your schedule would permit. Please call John McNamara or Richard Silverman at SRP (602/236-5900) or me in Washington (202/944-1561) if you or your staff have any questions.

Sincerely yours,


Henry V. Nickel

cc: Mr. Michael Shapiro
Mr. John S. Seitz
Ms. Lydia Wegman
Mr. Gregory B. Foote

Call Kelly
456-7803
to confirm



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① Letter to President
② Draft proposal on the NGS -
not cleared with anyone. Keep on
close hold. We are trying to clear
through the client on Tuesday a version of this
letter in which it would formally offer this alternative

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JOHN J. RHODES III
1ST DISTRICT, ARIZONA

Congress of the United States
House of Representatives
Washington, DC 20515

January 4, 1991

The President
The White House
Washington, D.C. 20500

Dear Mr. President:

Recognizing the great importance of the Grand Canyon to the nation and our home state of Arizona, we have actively followed the Environmental Protection Agency's (EPA) efforts to improve visibility at the Grand Canyon and its subsequent proposal to install pollution control equipment at the Navajo Generating Station (NGS).

We have taken special note of Interior Secretary Manuel Lujan's request for the National Academy of Sciences (NAS) to review the scientific evidence serving as the basis for the EPA's regulatory proposal. As you can see from the attached clips, this NAS critique found that the EPA evidence failed to show how much or how often NGS emissions affect winter-time haze in the Grand Canyon.

In addition, we have examined the preliminary results from the independent Navajo Generating Station Visibility Study which suggest the plant has a de minimis impact on visibility in the Canyon.

We are concerned that the EPA appears to be minimizing the results of these two studies and plans to move forward with its original proposal to install 90 percent scrubbers at a three-hour rolling average at the NGS plant.

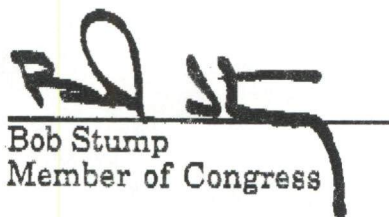
Some estimates of the potential long-term costs of implementing EPA plan could reach \$4 billion, including initial capital costs and operation and maintenance over 30 years. The fact is, the federal government (Department of the Interior) is a 24.3% partner in the ownership of NGS. Thus, the federal government and American taxpayers would be subject to nearly one-quarter of the costs of the EPA approach.

While we believe some action is imperative to protect visibility at the Grand Canyon, we also believe the evidence is inconclusive as to what action should be taken to address visibility impairment. We are not at all sure that the EPA proposal is the prudent or appropriate course of action. This proposed rule would not only have additional detrimental impact on our already-depressed state economy, but according to the studies, may do virtually nothing to improve what can be seen at the Grand Canyon.

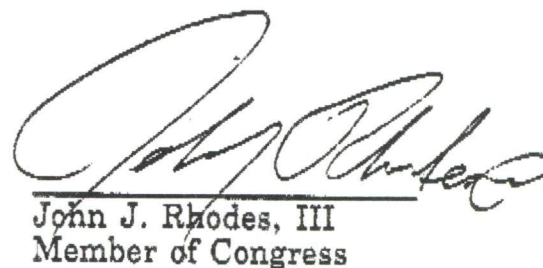
The President
January 4, 1991
Page Two

As your Administration undertakes implementation of this important regulatory program, it is crucial to proceed in a manner utilizing sound scientific analysis and exercising good judgment. We would appreciate your attention to this very important matter.

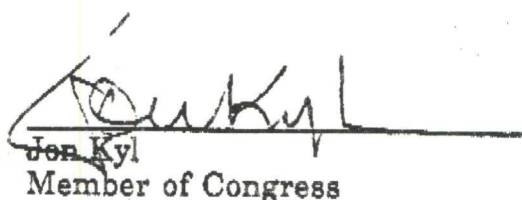
Sincerely,



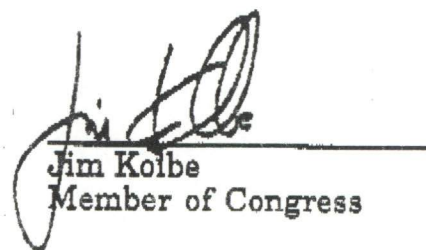
Bob Stump
Member of Congress



John J. Rhodes, III
Member of Congress



Jon Kyl
Member of Congress



Jim Kolbe
Member of Congress

Draft of January 7

PRIVILEGED AND CONFIDENTIAL

January --, 1991

EPA Draft Proposed Rule on Visibility in the Grand Canyon

The Environmental Protection Agency must decide by February 1st whether or not to initiate a rulemaking under Section 169A of the Clean Air Act to attempt to address visibility impairment in Grand Canyon National Park allegedly caused by sulfur dioxide emissions from the Navajo Generating Station ("NGS").

EPA's current proposal -- to require NGS to install scrubbers to reduce its SO₂ emissions by 90% -- would impose enormous economic costs and produce little improvement in visibility. Further, this approach would ignore completely the sources of regional haze that are the major causes of visibility problems, and would undermine the better policy approach, recently endorsed by Congress, of seeking a comprehensive regional response to haze in the Grand Canyon.

There is a better alternative -- an approach that could offer far more cost efficient emissions reductions than 90% scrubbers, and would allow coordination with the work of the Grand Canyon Visibility Transport Commission, created by the Clean Air Act Amendments to address the regional haze problem in the Grand Canyon. The centerpiece of this approach would be a test of promising clean coal technologies at the NGS, to be conducted at the same time as EPA's regional haze studies required by the CAA Amendments and the deliberations of the Visibility Transport Commission.

This Memorandum seeks your support for this alternative and your assistance in perfecting this alternative to be pursued in lieu of the proposed rulemaking. If additional time is necessary, EPA could approach the district court to seek a 60-day extension of the impending judicial deadline in order to work out the details of this approach.

I. LEGAL AND POLICY PROBLEMS WITH THE CURRENT EPA PROPOSAL

In February 1990, EPA submitted to OMB for review a draft NPRM that would institute a Best Available Retrofit Technology rulemaking for NGS. This precedent-setting rulemaking presents significant environmental, economic and energy policy issues.

The draft NPRM would initiate a rulemaking to impose SO₂ emissions limits on the NGS of 0.1 lbs/MM Btu, computed on a three-hour rolling average basis. These emissions controls would

not be intended to protect human health; their sole purpose would be aesthetic, to improve vistas for visitors to the Grand Canyon during a few days in the winter months, when tourism is at its lowest level and visibility is at its best.

The NGS is a modern plant, and it burns some of the lowest sulfur coal of any electric utility in the country. The Salt River Project estimates that the draft NPRM would seek to require retrofitting with scrubbers to remove 95% of the SO₂ from the NGS. EPA estimates that the costs of attaining this emissions limit are \$145 million annually for 30 years, or \$4 billion over the remaining life of the plant.

EPA has never previously initiated a BART proceeding for visibility. In virtually every other case it has studied, EPA has determined that visibility problems are due to "regional haze", i.e., pollutants from many industrial and urban sources, both near and distant. Because regional haze cannot be attributed to any particular source, it is not redressable under EPA's current rules.

There are three major problems with EPA's regulatory strategy, which make it unlikely that this approach can succeed.

A.) Reasonable Attribution. Section 169A of the Clean Air Act requires that before EPA may issue a BART proposal, it must first determine that a visibility problem in a Class I Federal area may be "reasonably attributed" to a single source or a small number of sources. In September 1989, EPA proposed to attribute wintertime visibility problems in the Grand Canyon to the NGS. 54 Fed. Reg. 36948. The attribution finding was based almost entirely on the National Park Service's WHITEX experiment.

WHITEX asserted that the NGS was responsible for 40% of the average wintertime haze in the Grand Canyon and 60-70% during the worst impairment periods. These conclusions contradicted the results of prior Park Service studies that found that visibility in the Grand Canyon had not deteriorated, and actually improved, since 1970. Prior studies also showed that most of the man-made portion of the visibility problem (especially during the summer) was due to regional haze, including sulfates transported from as far away as the Los Angeles basin.

The WHITEX experiment originally was designed to assess the feasibility of an experimental methodology for tracing smokestack emissions to distant locations. It was designed to test whether a tracer element injected into the NGS exhaust stream could be detected, not in the Grand Canyon, but in the Canyonlands National Park in Utah. After the data collection phase of this pilot effort had been completed, the Park Service changed the test and claimed that it provided a basis for regulating a specific source (the NGS).

The WHITEX experiment has been repeatedly criticized because of significant problems with its design and implementation. Obvious problems were created when the purpose of the experiment was changed after data collection so that it now must support an attribution finding, not merely assess the methodology of using tracer elements. To resolve these concerns, in 1989 the Secretary of the Interior requested that the National Academy of Sciences review the Park Service's work and comment on the reliability of using the WHITEX experiment as the basis for rulemaking.

On October 3, 1990, the National Research Council of the National Academy of Sciences published its study, which found that WHITEX was deeply flawed. The NRC concluded that there were several critical errors in WHITEX, including insufficient data, inadequate methods, and inadequate analyses. In particular, the NRC concluded (at 4) that "WHITEX did not quantitatively determine the fraction of SO₄ aerosol and resultant haze in [the Park] that is attributable to NGS emissions". This conclusion fatally undermines the draft NPRM's reliance on WHITEX for the indispensable "reasonable attribution" finding.

After the NRC study, all that is left of WHITEX is the NRC's conclusion (at 3) that it showed that "at some times during the study period, NGS contributed significantly to haze [in the Park]", without being able to quantify the size of that contribution. Despite the NRC's withering criticism of WHITEX, EPA may proceed with its original regulatory proposal, based solely on NRC's characterization of the NGS's contribution as "significant". The question of the amount of the NGS contribution to haze in the Park was answered conclusively by the subsequent Salt River Project study conducted during the winter of 1990.

The Salt River Project study of visibility in the Grand Canyon was the most comprehensive study on visibility ever conducted in the United States. The initial results from this \$12.5 million independent and peer-reviewed study are now available and have been provided to the EPA staff. The study confirms EPA's observation in its 1985 Inter-Agency Task Force Report on Visibility, the formation of haze is heavily dependent on the presence of substantial humidity. The Salt River Project study confirms that the necessary precursors of haze (humidity above 70% and substantial amounts of hydrogen peroxide) are rarely present in the Canyon at the same time as emissions from NGS.

The basic finding from the Salt River Project study is that NGS emissions make a contribution to Grand Canyon visibility impairment in only 4-7% of the test time periods. And in about half of these periods, it was either cloudy or nighttime.

These results effectively refute what little was left of WHITEX and demonstrate, under its own precedents, that EPA has no current basis for a "reasonable attribution" finding.

B. Cost/Benefit Considerations. The costs of the draft NPRM substantially outweigh its benefits, contrary to Section 169A of the CAA and Executive Order No. 12291.

EPA's draft Regulatory Impact Analysis estimates the costs at \$1626-2280 per ton of SO₂ removed. Measured against other regulatory decisions, this is an enormous cost, especially since the SO₂ reductions are intended simply to improve visibility and then only for a few days each winter. By contrast, EPA estimated that the acid rain provision of the Senate version of the recent CAA Amendments was approximately [\$700] per ton.

The cost issues are particularly significant for the Federal government, because the United States Bureau of Reclamation owns 24% of the NGS, and thus will have to fund its share of capital and operating costs from scarce Federal budgetary resources. Furthermore, the additional costs for power and water ultimately would be imposed on the ratepayers of Arizona, where the economy has been stagnant for a substantial period of time. Finally, the capital and operating cost consequences have substantial implications for the Salt River Project and other owners of the plant. For example, in the last month alone, the Salt River Project already has announced the layoff of 430 employees, due to the decline in the Arizona economy.

The draft also systematically overstates the benefits of EPA's approach. EPA principally relies on a controversial "contingent valuation" approach to measure how much Americans theoretically would be willing to pay for visibility improvements in the Grand Canyon. EPA did not conduct a specific study to measure the benefits of the BART proposal. Rather, its experts extrapolated from data they had gathered in prior studies, in which respondents were asked different questions intended to evaluate different kinds of visibility improvements than those presented by the NPRM (i.e., questions valuing improvements in human health, animal and plant welfare and protection of rock formations in the Grand Canyon, rather than questions about visibility improvements alone). On this basis, EPA contends that Americans would be willing to spend in excess of \$100 million annually for the next 30 years to obtain marginal improvements in visibility during the winter.

These figures, derived under this controversial economic theory that has never previously been the basis for a major regulatory action, constitute the sole "benefits" claimed by EPA. The studies relied upon by EPA have obvious flaws. Indeed, they have been heavily criticized in the recent draft report of the

National Acid Precipitation Assessment Project (Question 1, pp. 6-29 to 6-35).

Furthermore, EPA essentially ignores the requirement in the CAA that it consider the degree of improvement in visibility that may result from a required installation of scrubbers. Visibility problems are greatest in the Grand Canyon during summer, but EPA does not allege that the NGS contributes to summertime pollution. Moreover, studies show that regional haze is the most significant cause of visibility problems in the Grand Canyon, but EPA's proposal does not even address this problem. Finally, EPA's claim that emission limits will improve wintertime visibility is based entirely on the exaggerated attribution findings of the misdirected WHITEX experiment. Thus, EPA's "degree of improvement" analysis must fall because WHITEX is not an adequate basis for the attribution finding.

C. The Proposed Emissions Limit Exceeds the NSPS. The New Source Performance Standard for coal-fueled powerplants that burn low sulfur coal requires a 70% reduction in SO₂ emissions. The draft NPRM would require the NGS to attain at least a 90% reduction, or the level required of new plants that burn high sulfur coal. Prior to the draft NPRM, EPA policy stated that the NSPS level generally would be held to be the "best achievable retrofit technology". But the draft NPRM also proposes to alter that policy for this matter. While EPA claims the required emissions reduction is "only" 90% under the draft NPRM, even if that is true this plant would be required to attain a performance level far beyond that required even of new plants under the 1977 Clean Air Act Amendments.

The direct implication of EPA's proposal is that visibility-driven standards can supersede and exceed NSPS limits. This raises major policy issues concerning the burdens to be imposed on coal-burning powerplants. This first BART proposal threatens to establish a precedent that will be especially troublesome in the west, where virtually every major utility plant is located near a Federal Class I area, but also will create substantial problems in the eastern States.

II. VISIBILITY SHOULD BE ADDRESSED ON A REGIONAL BASIS.

The draft NPRM, by singling out one potential source of haze for immediate regulation, threatens to frustrate the more promising policy approach, specifically endorsed by Congress in the 1990 Clean Air Act Amendments, of devising a comprehensive regional solution to the regional haze affecting Grand Canyon National Park.

Long-range transport of pollutants is clearly a major cause of haze in the Canyon and would defeat efforts to address the problem by regulating minor, local sources. The problem needs to

be addressed comprehensively, through a coordinated and fiscally responsible approach that considers all sources of the problem during all seasons of the year. Congress recently established specific mechanisms and prompt deadlines to develop a regional solution. Until that process has had a chance to work, EPA should not disrupt this process by attempting to regulate individual sources for the same purpose.

--New Section 169B of the CAA requires EPA to establish within one year a Grand Canyon Visibility Transport Commission, to study and make recommendations concerning regional problems affecting visibility in the Park. The Governor of each affected State will be represented on the Commission. Haze in the Canyon is a regional problem, and a solution should be sought on a regional basis, and in a comprehensive fashion. The Commission is required to submit its report and recommendations within four years after its establishment.

The Commission, by involving the Governor of each State, provides an ideal mechanism to develop a comprehensive and coordinated response to visibility concerns, consistent with the principles of Federalism. Indeed, by requiring EPA to establish this Commission while merely authorizing it to create other regional transport bodies, Congress has strongly suggested that the Commission is the preferred mechanism for addressing haze in the Canyon.

--Section 169B also earmarks appropriations for research on regional haze and requires EPA to conduct studies on an expedited basis and publish results before the Grand Canyon Visibility Transport Commission is due to report. In 13 years, EPA has never developed an effective regional haze program, due to budget constraints on research funds and the scientific complexities involved. Congress intended to break this deadlock by compelling EPA to conduct the studies necessary to devise an effective regional haze program.

In sum, Congress has required EPA to conduct necessary regional haze studies and create a forum for the affected States to negotiate a regional solution to a regional visibility problem. This process arguably is mandatory, but in any event offers a greater possibility of success than piecemeal regulation of local but minor sources during the interim period while the science is being gathered and the States are deliberating. Therefore, as a matter of sound policy, until the Visibility Transport Commission issues its report and recommendation under Section 169B(d)(2), EPA should not seek to regulate individual sources in an effort to address visibility in the Canyon.

III. AN ALTERNATIVE APPROACH FOR NAVAJO GENERATING STATION

An alternative has been developed that is preferable to the EPA draft rule on environmental, energy and economic policy grounds. The Administration should decide to proceed with this proposal in lieu of initiating a BART rulemaking for NGS.

The alternative approach has several principal elements:

--The participants in the NGS would agree to help fund, and otherwise to cooperate fully with, the regional haze studies that EPA is required to conduct under the CAA Amendments, to assure that EPA can collect the scientific and technical data necessary to permit a full assessment and evaluation of all sources of haze in the Grand Canyon.

--EPA would expedite establishment of the Grand Canyon Visibility Transport Commission. The owners of the NGS would cooperate fully with the Governors of the affected States and the Commission in the conduct of its inquiry.

--The participants in the NGS would agree to undertake tests to try to demonstrate the feasibility of several promising clean coal technologies that may provide alternatives to conventional scrubbers on plants fired by low sulfur western coal. If one of the technologies were demonstrated to achieve an agreed upon minimum removal efficiency at an agreed upon cost, the operator would commit to install that technology and operate it on a seasonal basis.

--The participants in the NGS would provide assurances that, if none of the technologies met the test criteria, they would then install pollution control devices that would remove at least 70% of uncontrolled SO₂ emissions measured on an annual basis. This technology would not have to be operational before January 1, 2000, the date upon which the first allowances would be issued to the plant under the CAA Amendments.

This alternative approach has several distinct advantages. First, it assures that any haze program will be based upon reliable science and sufficient data, rather than an emotional response or the flawed WHITEX experiment, which are now driving the draft NPRM. Second, it allows coordination of the haze program with the regional haze studies to be undertaken by the EPA and the recommendations of the Grand Canyon Visibility Transport Commission. This assures maximum input of the States into the ultimate solution.

Third, an alternative technological test program offers both immediate, local pollution reductions and a potentially major contribution to long-term pollution reduction efforts, not only

at NGS but at many other plants that burn low sulfur coal. Finally, this approach will assure that there will be long-term, large-scale reductions in SO₂ emissions from the NGS, installed under deadlines that will permit the market for allowances to help finance the substantial capital and operating costs that otherwise would have to be absorbed by the Arizona economy and Federal taxpayers.

A. Regional Visibility Studies. Administrator Reilly has repeatedly acknowledged the critical importance of basing EPA rules on solid scientific work. He also has recognized the dangers of the "ready, fire, aim" type of regulation, when rules are based on emotional reactions to an environmental issue rather than considered policy analysis. The draft NPRM reflects both flaws, particularly its proposed reliance on the WHITEX experiment as the basis for regulation.

This alternative will provide a far more reliable scientific and technical basis for considering a response to the haze program. The 1990 Salt River Project study of NGS represents a quantum leap forward in the sophistication and reliability of region-wide atmospheric studies. That experience will be invaluable in conducting proper studies to cure one of the NRC's principal criticisms of WHITEX, its failure to consider the other point and regional sources that obviously contribute to haze in the Grand Canyon.

The participants in the NGS should help improve those studies by assisting with their funding, design and implementation. Especially with the strain on EPA resources caused by implementation of the 1990 CAA Amendments and the fiscal constraint caused by Federal budget issues, such financial contributions could be of substantial value in accelerating the timetable and permitting more thorough studies.

B. Coordination with the Visibility Transport Commission.

This feature offsets one of the principal flaws in the draft NPRM, the likelihood that a piecemeal approach of source-by-source regulation would not actually result in improved visibility in the Grand Canyon.

While the haze problem is clearly regional, little is now known of the contributions made by other sources, or at what cost they could be controlled. Permitting the Governors to study the problem on a regional basis and devise a comprehensive solution offers the best opportunity for a cost effective approach to the problem. In particular, this approach will allow coordination of the regional haze program with other programs required by the CAA Amendments, notably the urban nonattainment and air toxic programs.

Administrator Reilly recently has written the Governors emphasizing their critical role in implementation of the CAA Amendments. The Commission, as a forum for direct study and planning by the Governors of all affected States, thus is an ideal forum for consideration of the visibility problem from both a Federalism and an environmental perspective.

C. Clean Coal Technology Program. The centerpiece of this program is the test of promising clean coal technologies as an alternative to scrubbers. This program offers the prospect of both immediate local emissions reductions and a long-term advance in the state-of-the-art of control technologies for low sulfur coal plants that could produce environmental benefits throughout the west. This approach is consistent with the clean-coal technology incentives incorporated in the Senate passed version of the 1990 Amendments.

Preliminary work has been done to explore the feasibility of a significant number of alternative technologies that might substantially reduce SO₂ emissions without requiring the enormous expense and loss of electricity capacity imposed by scrubbers. Based on that initial review, several approaches, including a sodium injection technology and a novel clay injection technique developed by TRIMEX, appear to warrant further testing. Attached to this letter is a detailed outline of how such a plan could be developed and implemented. The precise list of technologies to be tested and other test conditions would be finally devised in consultation with EPA staff.

If one of these technologies were demonstrated to reduce SO₂ emissions efficiently and cost effectively, NGS should agree that it would install it and operate it on a seasonal basis to address the NGS's wintertime contribution to haze. As part of the design of the program, the NGS and EPA would agree upon the minimum removal efficiency, cost and other criteria that must be satisfied by the alternatives to be tested.

D. Control Technology. If none of the clean coal technologies satisfied the test criteria, NGS should agree that it would then select and install pollution control equipment that would remove at least 70% of the uncontrolled SO₂ emissions measured on an annual basis. This technology would be operational on January 1, 2000, the date when the first allowances will be issued to the plant.

Deferring selection of a 70% control system until after completion of the test, that is until the mid-1990s, offers several advantages. First, it would allow the parties to take advantage of any other developments in pollution control technology in the interim, as long as the ultimate performance standard was met. Second, coordinating the receipt of allowances with the installation of higher cost controls will allow the

market to underwrite part of the capital and operating costs of controls. Accordingly, the net costs to the ratepayers of Arizona and the Federal budget will be significantly less than they would be if control costs had to be incurred at an earlier time.

In light of the NRC's criticism of WHITEX and the gross cost-benefit disparity of the 90% scrubber proposal in the draft NPRM, EPA has an ample basis for determining not to proceed with the proposal but instead to pursue a promising alternative technology test program.

CONCLUSION

The alternative approach described above offers substantial benefits to the Administration. First, it avoids imposition of massive costs on the economy of Arizona to produce little, if any, improvement in visibility in the Grand Canyon. Second, this approach allows the Administration to seize the initiative on an important environmental issue. By expediting creation of the Grand Canyon Visibility Transport Commission and engaging the Governors of the affected States in a formal process to study and make comprehensive recommendations concerning the entire regional haze problem, the Administration would seize the high ground and in the debate and move effectively toward a long-term solution to the problem. This approach already has been endorsed (some would say required) by Congress in the CAA Amendments.

The alternative plan might have the effect of pushing back slightly the date at which further pollution controls would be imposed at the NGS. In reality, there likely would be little difference between this alternative and the result likely to emerge from an adversarial rulemaking. If any delay occurs, it is more than counterbalanced by an important clean coal technology program, with potentially broad emissions reductions implications both for the NGS and for other low sulfur coal plants. And in the final analysis, the alternative approach is assured of producing substantial emissions reductions from the NGS within a period of time that is eminently reasonable and integrated with other related deadlines in the CAA Amendments.

For these reasons, we solicit your support for the proposal that EPA proceed with this alternative approach in lieu of the draft NPRM instituting a BART rulemaking.

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December 21, 1990

C. Boyden Gray
Counsel to the President
The White House
Washington, D.C. 20500

Dear Boyden:

You may recall our earlier discussions with regard to the visibility rulemaking and the Navajo Generating Station. The demanding SO₂ reduction of the Clean Air Act Amendments make other programs, such as visibility, that would reduce SO₂ emissions even more costly.

At the same time, additional studies of visibility impairment in the Grand Canyon are now in hand -- at least the preliminary results are -- and they demonstrate that NGS is a very minor influence, so that the benefits of scrubbing NGS are very low.

We have proposed to EPA an R&D program as outlined on the attached sheet. After the holidays, we would like to talk to you about it and the studies.

Great work with the Municipal Waste Combusters.

Have a Merry Christmas.

Sincerely,



Robert P. Bedell

Attachment

cc: Jeff Holmstead

The following is an outline of a possible proposal for settlement.

I. Alternative BART limitation

1. A program would be undertaken to demonstrate the Trimex system and any other promising alternatives to conventional scrubbers. If the injection technology were demonstrated to achieve an agreed upon minimum removal efficiency at an agreed upon cost, the technology would be installed and would be operated on a seasonal basis.

2. The SO2 allowance "market" would underwrite more costly controls if the injection technology is not demonstrated. Technology that would remove at least 70 percent of uncontrolled emissions on an annual basis would be installed. This technology would not have to be in operation until January 1, 2000, the date upon which the first allowances will be issued to the plant. The operating and capital costs to consumers would be substantially reduced through the sale of these allowances.

3. The operator would agree to support regional visibility studies conducted under the 1990 Amendments.

II. Policy Considerations

1. The proposed approach could lead to development of control systems that cost much less than scrubbers. Other sources contributing to haze in the park could then be controlled at much less cost, expediting regional reductions in sulfates.

2. Deferring selection of a 70 percent control system until after 1995 allows the operator to take advantage of any clean coal technologies that will have been developed by then.

3. Regional haze studies called for under the 1990 Amendments will not be completed until the mid-1990's. As a result, the compliance date of January 1, 2000, is around the time that other units contributing to haze will be controlled, if controls are found to be justified by the visibility studies.

4. The effect of reductions at other sources contributing the haze (e.g., those in urban nonattainment areas) will begin to be seen in the year 2000. Prior to that time, visibility improvements as a result of controls at the plant would be marginal.

5. The plant does not receive allowances until January 1, 2000. Coordinating that deadline with the installation of higher cost controls allows the operator to underwrite the capital and operating costs of controls through sales of allowances, making control costs much less than they would be today.

**WARREN
BROOKES**

Curbing haze at \$2 billion a mile

One of the weapons used by the Reagan administration against regulatory overkill was the Office of Information and Regulatory Affairs (OIRA), operating under the budget director.

Unfortunately, Democrats in Congress, particularly Sen. John Glenn of Ohio, have waged such effective guerrilla warfare against OIRA, Dick Darman has chosen to let the agency fade back into the shadows, rather than risk possible defunding.

But, under an executive order issued by President Reagan, OIRA

The vindictive tone of this indictment, with the prospect of a scalp on the EPA belt, shows it has nothing to do with improving Canyon visibility.

can still bring egregious issues to what is now known as the President's Council on Competitiveness. That council, directed by Vice President Dan Quayle, has been putting together a highly professional staff under Al Hubbard, who reportedly is being considered for OIRA director, where he would also sit as a council member and bring OIRA's worst cases to the council's attention.

We have another prime candidate. The midlevel bureaucrats in the Air Division of the Environmental Protection Agency plan one of the most outrageous insults to consumers in even its own illustri-

ous history of misspent billions. They are pushing the EPA to rule this February that the Navajo Generating Station in Arizona, some 80 miles downwind of the Grand Canyon, is the main source of wintertime haze over the Canyon, and must spend up to \$4 billion (over a 20-year period) to cut its sulfur dioxide emissions by 90 percent.

This will cost its 1.2 million electricity customers about \$140 million a year in higher rates, and might raise total average visibility over the Canyon by two miles on a base of about 150 — or a haze reduction cost of about \$2 billion per mile.

To put it another way, since the haze reduction is limited to about 4 percent to 7 percent of the days within a three-month wintertime period, during which the Canyon has a net of about 350,000 visitors, the cost per visitor actually affected is about \$7,000. The cost per Arizona household is about \$110 per year.

It all started with a 1982 lawsuit by the Environmental Defense Fund under the Clean Air Act, charging EPA and the National Park Service (NPS) were not doing enough about Canyon visibility impairment.

In the eight years since, more than \$20 million has been spent not on haze reduction but just trying to find someone to blame it on and charge it to. That's not easy since the Canyon is a clear shot some 500 miles downwind of Los Angeles, the land of the Big Smog and home to 10 million car-driving, barbecuing fools.

So NPS and EPA looked around for a nice deep corporate pocket and landed on the Navajo Generating Station's power plant. There were several problems. First, the power plant burns the cleanest sulfur coal in the nation with emissions below those allowed by the new Clean Air Act.

Second, because of climate conditions, the Navajo Generating Station cannot contribute anything to summertime haze, when visitor numbers are greatest. The only time you get the right combination of humidity and wind directions to push Navajo Generating Station smoke toward the Canyon is in the winter. And the only time that SO₂ can affect visibility is when the relative humidity is high enough to form aerosol sulfates (SO₄).

All of this explains why the efforts to blame the Canyon's haze problems on the Navajo Generating Station have been so costly and futile. More than \$15 million has been

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BROOKES

From page F1

spent putting tracer gases in the Navajo Generating Station smokestack, and measuring their appearance at Canyon sites in two major studies.

The first study, done by NPS at a cost of \$2 million, was so full of holes it had to be reviewed by a special panel of experts appointed by the National Research Council of the National Academy of Sciences that after another half-million dollars or so of analysis concluded that even though NPS had proved the presence of some NGS gases at the Canyon "did not quantitatively determine the fraction of SO₄ aerosol and resultant haze ... attributable to NGS emissions." It thus had absolutely no basis to regulate!

Instead of retreating, EPA regulators seized on the slender thread from the National Research Council's conclusion "that at some times during the study period NGS contributed significantly to haze in [the Canyon]," but the National Research Council scorned the National Park Service claim that this was more than 70 percent.

That's why EPA was thrilled to discover that a really first-quality study commissioned by Navajo Generating Station and just completed at a cost of more than \$12 million under the supervision of the University of Minnesota also showed NGS tracer gases present during 21 percent of the measurement periods at Hopi Point.

What they ignored is that most of those times, relative humidity was well below 70 percent and visibility was thus above normal. On only 4 percent to 7 percent of the times were both high humidity and power-station pollutants present and vision impaired, and half of those occasions came when it was either cloudy or at night.

That is to say that if all of the Navajo Generating Station sulfur emissions were scrubbed away, you would theoretically see only a tiny effect on, at most, about 2 percent to 3 percent of wintertime days, affecting less than 0.7 percent of all visitor days. Worse, the study showed that "The times of worst visibility in the Canyon occurred when NGS emittants were not in the vicinity of the Canyon and when hazy air was being transported into the region from southwest of the Canyon." In other

words, from Los Angeles.

More important, "during the period when the NGS emittants were present at the canyon, the average light-scattering values were no greater than when the emittants were absent." So there is no evidence that spending \$4 billion to reduce emissions from the Navajo Generating Station will have any effect whatsoever on winter visibility.

You would never know this from an exultant report in the newsletter *Inside EPA*, which quoted an EPA source saying this study "has incriminated a power plant as a major polluter and will likely bolster EPA's proposed controls for the source." It rejoiced, "If the controls are imposed, it will mark the first time EPA has regulated a single power plant based on its contribution to visibility impairment in a National Park."

The vindictive tone of this indictment, with the prospect of a scalp on the EPA belt, shows it has nothing to do with improving Canyon visibility, only with expanding EPA's turf.

No wonder top EPA management are reportedly trying to figure out how to avert this classic regulatory obscenity. Mr. Quayle should lend them a hand and save power consumers from the terminal yuppieism of William Reilly's EPA.

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01. Talking Points	Talking Points for Conversation with EPA on Visibility Rulemaking (3 pp.)	09/26/90	P-5	

Collection:

Record Group: Bush Presidential Records
Office: Counsel to the President, Office of
Series: Holmstead, Jeffrey
Subseries: Miscellaneous Subject Files
WHORM Cat.:
File Location: Environmental Protection Agency/Clean Air Act/Grand Canyon Visibility [2]

Open on Expiration of PRA
 (Document Follows)
 By JS (NLGB) on 4/24/2006

Date Closed: 8/7/2002	OA/ID Number: 45145-003
FOIA/SYS Case #: 2001-1865-F	
Re-review Case #:	
P-2/P-5 Review Case #:	
MR Case #:	Appeal Case #:
MR Disposition:	Appeal Disposition:
Disposition Date:	Disposition Date:

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

- P-1 National Security Classified Information [(a)(1) of the PRA]
- P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
- P-3 Release would violate a Federal statute [(a)(3) of the PRA]
- P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
- P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
- P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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- (b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
- (b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
- (b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
- (b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
- (b)(9) Release would disclose geological or geophysical information

September 26, 1990

TALKING POINTS FOR CONVERSATION WITH EPA ON VISIBILITY RULEMAKING

Purpose: Suggest that EPA consider resolving the pending rulemaking concerning visibility in the Grand Canyon by adopting an alternative clean coal technology project at the Navajo Generating System, including a test of the TRIMEX clay injection technology.

1.) Problems EPA Faces in Pending Rulemaking.

EPA is facing a tough rulemaking decision on how to address visibility concerns in the Grand Canyon. As matters stand now, EPA faces a tough "go/no go" decision whether to require that scrubbers be installed at the Navajo Generating Station, with no intermediate options on the table.

EPA will have substantial problems in pursuing a Best Available Retrofit Technology rulemaking to try to require installation of scrubbers.

--The BART process has never been tried before and will be difficult to administer;

--Scrubbing will be very expensive: EPA's draft Regulatory Impact Analysis suggests that the cost will be \$4 billion over the life of the plant; the costs will be \$1600-2200 per ton of SO₂ removed, numbers which far exceed the costs per ton of the Acid Rain provisions of the CAA Amendments;

--It will be highly controversial. The cost of electricity from the plant will increase 25%, and the costs will be imposed on an Arizona economy that has been weak for several years;

--Requiring scrubbing here would threaten to upset the delicate balance we are trying to reach in the Acid Rain provisions; since the decision here might set a precedent for every other major unscrubbed utility plant in the west, it will be closely followed;

--The benefits EPA claims are purely aesthetic (views) and are derived exclusively from "Contingent Valuation" studies estimating what people would be "Willing To Pay" for increased visibility. Contingent Valuation studies have never been the basis for a major Federal rulemaking. The economic theory itself is highly controversial, and there appear to be substantial problems with the studies on which EPA is relying.

2.) Imminent Developments. The most important factor in the equation is that two major studies are going to be released in the next two to three weeks that will undermine EPA's public

position in favor of a BART rulemaking.

--The sole basis on which EPA is proceeding is the National Park Service's WHITEX study, which led EPA to publish an NPRM proposing that visibility problems in the Grand Canyon could be "reasonably attributed" to the Navajo Generating Station.

--The National Academy of Sciences is expected to release within a short period of time a report that reportedly will severely criticize the Park Service's WHITEX study and conclude that it cannot form the basis for a "reasonable attribution" decision.

--Shortly after the NAS study is released, EPA will take a second hit. The Salt River Project will release the preliminary results of its extensive study, and they will show that WHITEX's attribution findings were unjustified.

When these reports are released, EPA will be in an embarrassingly public position. It will have created public expectations of movement on visibility in the Grand Canyon. But it will not have evidence to proceed with the BART rulemaking, and it will have no other viable options to resolve the problem short of having to fold.

3.) An Alternative Technology Project. EPA should strongly consider addressing the Grand Canyon problem through an Alternative Technology Project instead of initiating a BART rulemaking. I think this offers a better long-term solution to air emissions problems and provides a rational -- and politically acceptable -- way to resolve EPA's exposed position.

The Salt River Project has been actively pursuing the possibility of conducting a clean coal technology project in lieu of a rulemaking. SRP has been reviewing several promising technologies, including a novel clay injection technology that I am familiar with. (Describe the clay injection at greater length).

An alternative technology program would have several advantages for EPA.

--It would avoid all the problems with pursuing the rulemaking, which is going to be difficult and expensive, and may not in the end be successful.

--It would provide an intermediate option for EPA besides a hard "go/no go" decision on the EPA staff proposal for scrubbers.

--Over the long-term, it may help overall efforts to reduce SO₂ and NO_x emissions from many plants if the alternative technologies, or any one of them, work.

Over the last few months, the SRP staff and its outside

experts have analyzed a number of injection techniques as possible candidates for an alternative technology project. By middle to late October, it expects to have reached preliminary conclusions on the feasibility of a test of several of these alternative technologies by middle to late October.

Recommendation. EPA should look carefully at an alternative technology test program as a solution for the Grand Canyon situation. EPA should begin discussions with Salt River about the possibility of resolving the rulemaking through an alternative technology project that will feature the TRIMEX and other approaches.

Those talks should begin now, while there is still several months left under the court-ordered deadline (February 1st) by which EPA must decide whether or not to initiate a BART proceeding.

Rosenberg asks: "what do you want me to do?"

COB: "Call Jerry Shapiro - SRP's outside
technical expert - ASAP at

[Draft proposing that public comments be requested on alternatives].

We believe that the draft NPRM should be revised to request comments on several alternatives in addition to the requirement for SO₂ scrubbers.

The current draft NPRM proposes only 90% emissions limits (scrubbing). There are several reasons why this approach is inadequate and why comments should be requested on other cost efficient alternatives.

1. The National Research Council has confirmed that the WHITEX study cannot be used to determine the amount of haze -- if any -- in the Grand Canyon caused by the NGS. Since the extent of NGS emissions that affect visibility in the Grand Canyon are uncertain, comments should be requested on a greater range of solution that might address the issue.

2. A 90% removal requirement, i.e. scrubbers, is not likely to be the appropriate solution, and, therefore, should not be the only one proposed.

For example, EPA's draft Regulatory Impact Assessment estimates the cost of scrubbers at \$1,626-\$2280 per ton of SO₂ removed. By way of comparison, EPA estimated that the Senate version of the Acid Rain provisions of the Clean Air Act would cost a small fraction of this amount (\$600-\$900 per ton).

Scrubbing is disproportionally expensive because it seeks to impose a capital-intensive, year-round remedial technique to redress a problem that is seasonal (wintertime) and episodic, existing only for discrete time intervals (including nighttime) during periods when the weather otherwise is poor.

Other more cost-effective alternatives should be proposed for public comment.

3. The effects of regional haze on visibility in the Grand Canyon were not measured by WHITEX. Regional haze may account for all of the visibility impairment in the Canyon. Since any emission reduction at NGS must be to achieve visibility improvement, the relative effects of NGS emissions and regional haze must be understood. This information will soon be available.

The 1990 Clean Air Act Amendments earmark money and require EPA to accelerate efforts to devise rules to address regional haze. The law also creates a Grand Canyon Visibility Transport Commission, to inquire into all sources of haze in the Park, including distant sources. All existing studies show that regional haze is a significant contributor to the visibility problem in the Canyon during all seasons of the

year. In the next 3 years, EPA will have available substantial additional information and remedial authority to address haze in the Grand Canyon. There is a substantial risk of error in EPA's proceeding in the near term with a piecemeal, but expensive retrofit requirement for one source, a reduction of SO₂ emissions from which is unlikely to have any observable effect upon visibility in the Grand Canyon.

Because of the uncertainty of the extent of the NGS emissions that affect visibility in the Grand Canyon (if any do), the uncertainty of any improvement in visibility that any level of NGS emissions reduction would have, and the large costs involved with the only "solution" proposed in the draft NPRM, other alternatives that may be more cost-effective should be proposed for public comment.

These alternatives should include less stringent reduction requirements, promising R&D technologies, clean coal technologies, operational limitations, etc.

In particular, a formal test of at least one alternative pollution reduction technology, in lieu of scrubbing, would offer several salient advantages. First, it would offer the prospect of substantial reductions in SO₂ emissions at NGS, through a more cost beneficial approach than a massive hardware retrofit. Second, it would offer the first opportunity to conduct formal, large-scale tests of promising pollution reduction techniques on a plant burning low sulfur western coal. The results of this program would assist EPA and the States in the long-term effort to prevent deterioration in visibility throughout the west.

Finally, the results of such a test could be integrated with the results of EPA's regional haze rulemaking, EPA's analysis of the effects of other pollution reducing programs in the CAA Amendments, and the deliberations of the Grand Canyon Visibility Transport Commission. If these further efforts suggest the need for further action at NGS or other sites affecting the Grand Canyon, they could be implemented in a comprehensive manner through one of the periodic reconsiderations of the Arizona SIP.

Attached to this letter is a draft of language that might be included in the NPRM to propose the alternative technology option.

ATTACHMENT

Objections have been raised to imposition of emissions limits that would require the retrofiting of the NGS with scrubbers, on the grounds that this approach would not be cost efficient and that, despite its significant costs, there would be little net improvement in visibility in the Grand Canyon. Advocates of this position argue that the costs are disproportional, because mandatory scrubbing would utilize a capital intensive, year-round approach to address a problem that is seasonal (wintertime), episodic within that season, and occurs largely in times of bad weather or at night. Proponents of this view cite the conclusions of the National Research Council that WHITEX is not a sufficient basis to determine the extent of haze caused by the NGS. They also rely on studies that show that regional haze is responsible for a substantial amount of the visibility problem in all seasons. Accordingly, they submit that, under these circumstances, requiring scrubbers at the NGS is not an appropriate regulatory response to the haze problem.

Proponents of this position also note that Section 816 of the CAA Amendments requires EPA to undertake several significant steps on visibility in the next three years:

- \$8 million is earmarked for each of the next 5 years for visibility studies;

- EPA is to publish interim findings on the regional haze problem within 3 years;

- EPA is to conduct an assessment within two years on the improvements in visibility in Class I areas likely to result from implementation of the urban non-attainment, acid rain and other provisions of the CAA Amendments; and

- EPA is to establish within 1 year a Grand Canyon Visibility Transport Commission, to study the region affecting visibility in the Park.

In view of the substantial additional information on regional haze and visibility in the Grand Canyon that will become available in the immediate future, proponents argue that it would be premature, inefficient and possibly counterproductive to impose a piecemeal scrubbing requirement on the NGS, especially when the amount of haze attributable to the NGS cannot be quantified.

Accordingly, public comments are requested on whether lower emission reduction requirements would be a more cost-effective alternative to improve visibility in the Grand Canyon that may be caused by emissions from NGS. Comments should address the desirability of the use of various technologies such as clean coal technologies or other R&D technologies or operational limitations to meet these reduced requirements.

In particular, comments are requested on the desirability of conducting a test of alternative pollution reduction technology techniques at the NGS, in lieu of scrubbing. This approach could offer several advantages. First, it may offer the prospect of substantial SO₂ emissions at NGS, through a more cost beneficial approach than installation of scrubbers. Second, it would offer the first opportunity to conduct a large-scale test of promising pollution reduction techniques on a plant burning low sulfur western coal. The results of this program could assist EPA and the States in the long-term effort to prevent deterioration in visibility in the Grand Canyon and throughout the west. Finally, the results of such a test could be integrated with the results of EPA's work on regional haze, EPA's analysis of the effects of other pollution reducing programs in the CAA Amendments, and the recommendations of the Grand Canyon Visibility Transport Commission.

§ 7491. Visibility protection for Federal class I areas (1)

(a) Impairment of visibility; list of areas; study and report

(1) Congress hereby declares as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution.

(2) Not later than six months after August 7, 1977, the Secretary of the Interior in consultation with other Federal land managers shall review all mandatory class I Federal areas and identify those where visibility is an important value of the area. From time to time the Secretary of the Interior may revise such identifications. Not later than one year after August 7, 1977, the Administrator shall, after consultation with the Secretary of the Interior, promulgate a list of mandatory class I Federal areas in which he determines visibility is an important value.

(3) Not later than eighteen months after August 7, 1977, the Administrator shall complete a study and report to Congress on available methods for implementing the national goal set forth in paragraph (1). Such report shall include recommendations for—

(A) methods for identifying, characterizing, determining, quantifying, and measuring visibility impairment in Federal areas referred to in paragraph (1), and

(B) modeling techniques (or other methods) for determining the extent to which manmade air pollution may reasonably be anticipated to cause or contribute to such impairment, and

(C) methods for preventing and remedying such manmade air pollution and resulting visibility impairment.

Such report shall also identify the classes or categories of sources and the types of air pollutants which, alone or in conjunction with other sources or pollutants, may reasonably be anticipated to cause or contribute significantly to impairment of visibility.

(4) Not later than twenty-four months after August 7, 1977, and after notice and public hearing, the Administrator shall promulgate regulations to assure (A) reasonable progress toward meeting the national goal specified in paragraph (1), and (B) compliance with the requirements of this section.

(b) Regulations

Regulations under subsection (a)(4) of this section shall—

(1) provide guidelines to the States, taking into account the recommendations under subsection (a)(3) of this section on appropriate techniques and methods for implementing this section (as provided in subparagraphs (A) through (C) of such subsection (a)(3)), and

(2) require each applicable implementation plan for a State in which any area listed by the Administrator under subsection (a)(2) of this section is located (or for a State the emissions from which may reasonably be anticipated to cause or contribute to any impairment of visibility in

any such area) to contain and other measures as may be necessary toward meeting the national goal, including—

(A) except as otherwise provided in this section, a requirement that the powerplant be in existence and in operation for more than 10 years as determined by the Administrator, and the plan promulgated under this section shall not require the powerplant to install or operate any additional pollution control equipment (hereinafter referred to as "best available technology") the best available technology for the State (or the Administrator) under section 7410(c) of this title, for such source for the purpose of preventing such impairment, and

(B) a long-term (ten-year) plan for reasonable progress toward meeting the national goal (a) of this section.

In the case of a fossil-fuel fire powerplant with a generating capacity in excess of 750 megawatts, under this paragraph shall be included by the Administrator under

(1) The Administrator may, after a public hearing, exempt any major source from subsection (b)(2)(A) of this section if the Administrator determines that such source does not or will not, by itself cause or contribute to a significant impairment of visibility in any such area.

(2) Paragraph (1) of this section shall not apply to a fuel fired powerplant with total capacity less than 750 megawatts unless the owner or operator of the powerplant has received a determination of the Administrator that such powerplant, in combination with other sources, may reasonably be anticipated to cause or contribute to a significant impairment of visibility in any such area.

(3) An exemption under this subsection shall be in accordance with the determination of the Administrator's determination

any such area) to contain such emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the national goal specified in subsection (a) of this section, including—

(A) except as otherwise provided pursuant to subsection (c) of this section, a requirement that each major stationary source which is in existence on August 7, 1977, but which has not been in operation for more than fifteen years as of such date, and which, as determined by the State (or the Administrator in the case of a plan promulgated under section 7410(c) of this title) emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area, shall procure, install, and operate, as expeditiously as practicable (and maintain thereafter) the best available retrofit technology, as determined by the State (or the Administrator in the case of a plan promulgated under section 7410(c) of this title) for controlling emissions from such source for the purpose of eliminating or reducing any such impairment, and

(B) a long-term (ten to fifteen years) strategy for making reasonable progress toward meeting the national goal specified in subsection (a) of this section.

In the case of a fossil-fuel fired generating powerplant having a total generating capacity in excess of 750 megawatts, the emission limitations required under this paragraph shall be determined pursuant to guidelines, promulgated by the Administrator under paragraph (1).

(c) Exemptions

(1) The Administrator may, by rule, after notice and opportunity for public hearing, exempt any major stationary source from the requirement of subsection (b)(2)(A) of this section, upon his determination that such source does not or will not, by itself or in combination with other sources, emit any air pollutant which may reasonably be anticipated to cause or contribute to a significant impairment of visibility in any mandatory class I Federal area.

(2) Paragraph (1) of this subsection shall not be applicable to any fossil-fuel fired powerplant with total design capacity of 750 megawatts or more, unless the owner or operator of any such plant demonstrates to the satisfaction of the Administrator that such powerplant is located at such distance from all areas listed by the Administrator under subsection (a)(2) of this section that such powerplant does not or will not, by itself or in combination with other sources, emit any air pollutant which may reasonably be anticipated to cause or contribute to significant impairment of visibility in any such area.

(3) An exemption under this subsection shall be effective only upon concurrence by the appropriate Federal land manager or managers with the Administrator's determination under this subsection.

(d) Consultations with appropriate Federal land managers

Before holding the public hearing on the proposed revision of an applicable implementation plan to meet the requirements of this section, the State (or the Administrator, in the case of a plan promulgated under section 7410(c) of this title) shall consult in person with the appropriate Federal land manager or managers and shall include a summary of the conclusions and recommendations of the Federal land managers in the notice to the public.

(e) Buffer zones

In promulgating regulations under this section, the Administrator shall not require the use of any automatic or uniform buffer zone or zones.

(f) Nondiscretionary duty

For purposes of section 7604(a)(2) of this title, the meeting of the national goal specified in subsection (a)(1) of this section by any specific date or dates shall not be considered a "nondiscretionary duty" of the Administrator.

(g) Definitions

For the purpose of this section—

(1) In determining reasonable progress there shall be taken into consideration the costs of compliance, the time necessary for compliance, and the energy and nonair quality environmental impacts of compliance, and the remaining useful life of any existing source subject to such requirements;

(2) in determining best available retrofit technology the State (or the Administrator in determining emission limitations which reflect such technology) shall take into consideration the costs of compliance, the energy and nonair quality environmental impacts of compliance, any existing pollution control technology in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology;

(3) the term "manmade air pollution" means air pollution which results directly or indirectly from human activities;

(4) the term "as expeditiously as practicable" means as expeditiously as practicable but in no event later than five years after the date of approval of a plan revision under this section (or the date of promulgation of such a plan revision in the case of action by the Administrator under section 7410(c) of this title for purposes of this section);

(5) the term "mandatory class I Federal areas" means Federal areas which may not be designated as other than class I under this part;

(6) the terms "visibility impairment" and "impairment of visibility" shall include reduction in visual range and atmospheric discoloration; and

(7) the term "stationary source of air pollutant" means any fixed or movable machine, engine, boiler, furnace, refrigerator, air conditioning unit, or other device which emits air pollutant from a stationary source, including but not limited to: thermal discharges, zinc smelter tailings, gasification plants, of charging facilities, and nitric acid rock processing plants, chemical processing facilities, British thermal units, and other facilities.

(July 14, 1955, c. 74 § 128, 91 Stat. 74)

¹ So in original. P.

Effective Date.
1977, except as otherwise provided, see section 406(d) of the Act for an Effective Date under section 7401.

Emission standards
New stationary sources

Health and Environment

1. Mandatory class I Federal areas
Determination of whether an area is a mandatory class I Federal area is subject to visibility impairment.

PART D—

Federally permitted emissions
regulation
Compensation

Changes in Policy and Timing

The schedule for development of this rule has been delayed in order to resolve unanticipated interagency policy issues.

Next Steps

Legal deadline: None.

Milestones:

Action	Date
NPRM.....	June 1990
Final Action	June 1992

Agency Contact

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RIN: 2060-AA04

FEDERAL PROMULGATION OF STATE IMPLEMENTATION PLANS TO PROTECT VISIBILITY

Problem To Be Solved

Section 169A of the Clean Air Act, as amended in 1977, required the Environmental Protection Agency (EPA) to promulgate regulations to remedy existing visibility impairment and prevent future impairment in certain national parks, wilderness areas, and international parks. EPA promulgated these regulations on December 2, 1980. They are codified at 40 CFR 51.300-51.307. These regulations require 36 States that contain the parks and wilderness areas to modify their State implementation plans (SIPs) to incorporate provisions to review visibility impacts for new sources, review existing source impacts on the parks and wilderness areas, and develop a monitoring strategy to track visibility levels in these areas. By December 1982, only one State had submitted a revision to its SIP to accomplish these requirements.

The Environmental Defense Fund (EDF) *et al.*, sued EPA to provide SIP revisions for those States that had not developed their own plan revisions. EDF cited the nondiscretionary duty of EPA under section 110 of the Act to develop implementation plans for States that do not adopt the requirements set forth in 40 CFR Part 51.

Need for Federal Solution

As a result of the EDF suit, EPA is under a court order (*EDF v. Thomas*, No. C-82-6850, N.D. Calif., agreement order approved by Judge Robert P. Aguilar, April 20, 1984, and amended on September 9, 1986), to develop implementation plans for those States that do not complete all the requirements.

Approach

As amended, the court order requires EPA to develop implementation plans for 34 States (an additional State had its plan approved before the court order was issued) into several parts over a period of approximately 5 years. The three parts, which are now completed, developed implementation plans for a monitoring strategy and new source review, integral vistas protection, a long-term strategy, and addressed existing source impairments in four areas in three States.

The fourth part addresses existing impairment in three areas in three States. On September 5, 1989, EPA proposed not promulgating regulations to remedy existing impairment in two of the three States (Maine and Utah), because the problems were being addressed by other mechanisms. However, the September 5th proposal did propose to attribute a significant portion of the wintertime visibility impairment in the Grand Canyon to the Navajo Generating Station (NGS) at Page, Arizona. Under section 169A, this determination triggers an assessment of the best available retrofit technology (BART) for the NGS. The BART determination will focus on sulfur dioxide emissions, which are converted to sulfate in the atmosphere and cause most of the visibility impairment caused by the NGS.

Next Steps

Legal deadline: NPRM, Judicial. The following milestones are court-ordered deadlines.

Milestones:

Action	Date
Proposal of Federal Plans (BART) for NGS.....	February 1991
Promulgation of Federal Plans (BART) for NGS.....	October 1991

Agency Contact

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September 16, 1990

MEMORANDUM FOR JEFF HOLMSTEAD

FROM: John Cooney
SUBJECT: Visibility in National Parks

Attached is a story from today's New York Times discussing the National Academy of Sciences review of the WHITEX study on visibility in the Grand Canyon.

I draw three conclusions from this article:

1.) The Clean Air Conference will reach the visibility issue in the immediate future. The first quote in the article is from Bob Yuhnke, the EDF lawyer who has litigated the visibility case for the last 8 years and is the draftsman of the House (Wyden) visibility proposal. The story essentially is an advocacy piece, analyzing the Grand Canyon issue from Yuhnke's point of view. He likely also collaborated with the reporter on the timing of the story, to obtain maximum effect on the Conference. Accordingly, I conclude that the Conference will reach visibility shortly after the air toxics deadlock is resolved.

2.) In Conference, the environmentalists' strategy likely will be to push the Wyden Amendment as hard as possible. The article suggests that, notwithstanding the NAS's criticism of WHITEX, they still think they will be able to obtain a Grand Canyon rule from EPA. The article does not suggest that the House Democrats believe that they need to shift their approach to seek a specific solution for the Grand Canyon in the CAA.

3.) Pressure on OMB to release the pending EPA NPRM will build immediately after the Conference is concluded. Paragraph 6 of the article specifically notes the pendency of the rule at OMB.

Grand Canyon Found a Victim Of Power Plant

Utility Emission Linked to Haze by New Study

Special to The New York Times

WASHINGTON, Oct. 15 — A new study has concluded that sulfur dioxide from a huge coal-burning power plant 16 miles from the Grand Canyon contributes significantly to the haze that blankets the canyon for much of the year.

Unlike an earlier report by the National Park Service, the study said it could not estimate how much of the haze came from the power plant.

"The extent could range from a very small percentage to 100 percent" depending on weather conditions, said the study, by the National Research Council, an affiliate of the National Academy of Sciences. It added that other power plants, ore smelters and car exhaust contributed to the problem.

But the new study makes it likely that the Environmental Protection Agency will order the plant, the Navajo Generating Station, near Page, Ariz., to install expensive scrubbers to control sulfur dioxide. The finding, said Robert Yuhnke, a senior lawyer at the Environmental Defense Fund, provided "enough information for the E.P.A. to go ahead and deal with it." The fund had sued the Government to force installation of the scrubbers.

Proposal to Scrub Emissions

For years, tourists and environmentalists have complained that the canyon's scenic panorama is disappearing behind a cloud of haze. The park service's study, in 1987, said the power plant was responsible for 70 percent of the sulfur dioxide emissions found in the park, and the E.P.A. took steps to propose that the emissions be reduced by 90 percent.

But the plant's owners, including the Bureau of Reclamation in the Department of the Interior, called the study hasty and inadequate and asked for a review by the National Research Council. The E.P.A.'s proposal on emissions is still under review by the Office of Management and Budget.

The Navajo Generating Station, which supplies power to Arizona, Nevada and California, is one of the biggest plants in the country. At peak production, the new study said, it can burn 24,000 tons of coal each day, releasing 12 tons to 13 tons of sulfur dioxide every hour. It has no scrubbers.

It is owned by a group that includes the City of Los Angeles, the Bureau of Reclamation and the Arizona Salt River Project, a state-owned utility.

Fears on Cost

Charles Brumback, the plant's manager, said that to reduce emissions it would have to add sulfur dioxide scrubbers that cost \$400 million to \$500 million to install and \$100 million a year to operate. "We really don't know the impact the controls would have," he said. "Until we know, we don't want to jump the gun."

A similar concern was voiced by Steve Goldstein, a spokesman for the Department of the Interior, whose agencies include both the park service and the reclamation bureau. "At what price clean air?" he asked.

Congress has been struggling with the issue of air pollution in national parks as it works on a new Clean Air Act. The House version of the bill would require the E.P.A. to issue regulations in two years that would insure improvements in visibility at national parks every five years. The Senate version would provide more money for study of the issue, and it favors giving regulatory powers to individual states rather than the E.P.A.

Fingerprinting Smoke

The current Clean Air Act generally requires installation of the best available technology on a plant that "emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility" in an area like the Grand Canyon National Park.

The National Park Service traced the pollution by "fingerprinting" the sulfur dioxide. A tracer was injected into a smokestack at the power plant, and the concentrations of the tracer were measured at the canyon. The study was conducted in winter, when the haze is at its worst.